Australian Personal Computer VOL 22 NO.4 APRIL 2001 ELECTRONIC ESPIONAGE
ISSN 0725-4415 Print Post Approved PP255003005559

apcmag.com

PENTIUM 4 PCs REVIEWED

100% AUSTRALIAN CONTENT

2CDs

Australian Personal Computer

NZ$9.95 inc GST
$9.80 inc GST

APRIL 2001

AUSTRALIA'S LEADING TECHNOLOGY MAGAZINE



I SPY...

electronic espionage

DIGITAL DILEMMAS
The future of TV?

E-MEDICINE
Just what the doctor ordered

BURN, BABY, BURN
CD burners tested

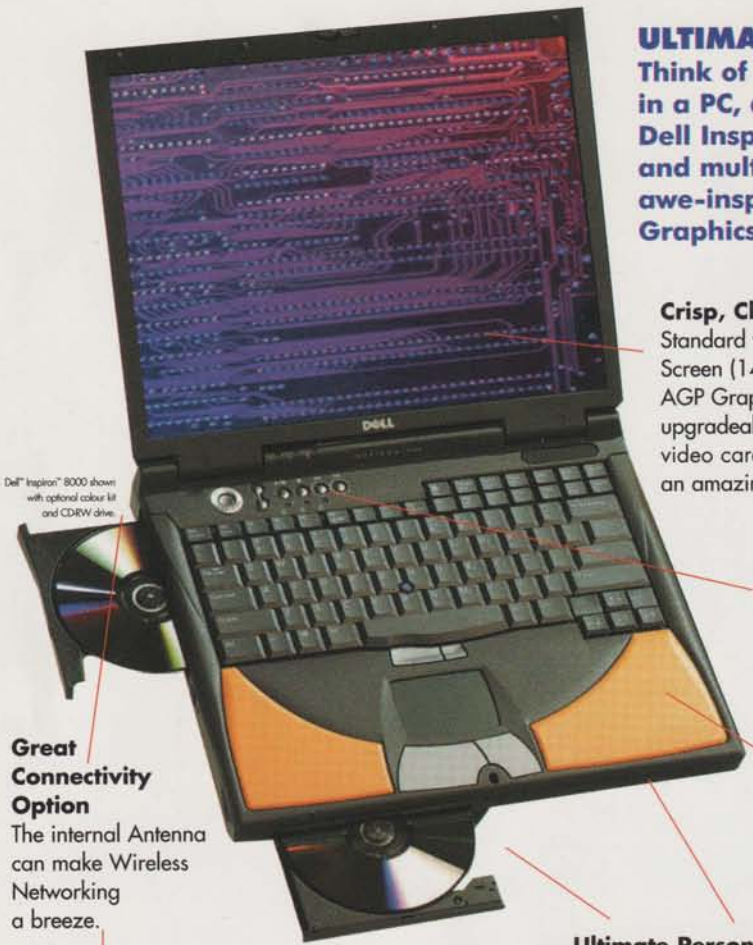
WORKSHOP REVIEWS NEWS OPINION CORPORATE IT AFTER HOURS

IF YOUR COVER CD IS MISSING, PLEASE ENQUIRE AT PLACE OF PURCHASE

9 313006 001362 04

ACP

TOP SCORING NOTEBOOK EVER^



Dell™ Inspiron™ 8000 shown with optional colour kit and CDRW drive.

ULTIMATE PERFORMANCE

Think of all the things you could ever want in a PC, and put them in a notebook. The new Dell Inspiron™ 8000 offers a level of power and multimedia performance that is truly awe-inspiring. It comes standard with 4X AGP Graphics, and a Hi-Res active/TFT screen.

Crisp, Clean Graphics
Standard with 14" Hi-Res Screen (1400x1050) & 4X AGP Graphics. Screen upgradeable to 15" and video card upgradeable to an amazing 32MB.

^"The [Inspiron™ 8000's PC World Bench 2000] score of 161 is the highest ever attained by a notebook"
Australian PC World, December 2000.

Easy Internet Access
Use the access direct buttons for one touch access to Dell Technical support for the Internet or email.

Great Looks
Optional Colour 'snap-on' kit for palm rests. Choose from Storm Grey, Tahoe Blue, Purple, or Yellow.

Great Connectivity Option
The internal Antenna can make Wireless Networking a breeze.

Amazing Video Editing Capabilities
Integrated Firewire port for hot-pluggable high speed data transfer. Lets you easily download and edit digital videos and photos.

Ultimate Personalisation
Imagine the possibilities... 2 optical bays give you the freedom to configure your Inspiron 8000 exactly how you want it. How about DVD + CDRW at the same time. Record CD's, watch DVD movies, or even transfer data from CD to CDRW on the go[8]. The possiblities are endless.

DELL INSPIRON™ 8000 G700XT NOTEBOOK

- Mobile Intel® Pentium® III Processor 700MHz
- 64MB SDRAM
- 5.0GB[1] HDD
- 8MB ATI MOBILITY M4, 4X AGP Video
- 3.5" FDD
- 14.1" Hi-Res SXGA Screen (1400x1050)
- 24X CD-ROM
 - ▶ UPGRADE TO: 8X MAX DVD-ROM $260*
- Microsoft® Windows® Millennium Edition
- Microsoft OEM Works Suite 2000
- Internal V.90/56K Modem Mini-PCI
- Carry Case
- 3-Year Limited Warranty (With 1st Year Next Business Day On-Site[4] Response)

FREE 128MB RAM VALID TILL MARCH 30, 2001

$3,599* PRICE INCLUDES GST. DELIVERY ADDITIONAL

$38.90** PER WEEK

Please Quote when ordering
E•VALUE CODE B540318Z - 479203

intel inside
pentium® III

www.dell.com.au

BUILD YOUR OWN AND ORDER ONLINE 24HRS/DAY

Dell recommends Windows® 2000 Professional for business.

Intel, the Intel Inside logo and Pentium are registered trademarks of Intel Corporation. DELD5030/PCU/FRONT

NEED MORE REASONS TO MAKE DI

DELL DIMENSION™ L DESKTOP



- Intel® Celeron™ Processor 700MHz
- Intel® 810e Chipset / 64MB 100MHz SDRAM / 10GB[1] HDD / 48X CD-ROM
 - ▶ **UPGRADE TO: 12X Max Variable DVD-ROM Drive and Software Decoding $112***
- Intel® 3D Direct AGP Graphics (Up to 11MB Shared Dynamic Video Memory Technology)
- 15" Colour Monitor (13.8"v.i.s.)
 - ▶ **UPGRADE TO : 17" Colour Monitor (15.9"v.i.s.) $204***
- Microsoft® Windows® Millenium Edition
- Microsoft® OEM Works Suite 2000
- 1-Year Limited Warranty
- **SAVE $50[2], OFF ORIGINAL $1,249 PRICE TILL 30/3/01**

NOW $1,199* PRICE INCLUDES GST. DELIVERY ADDITIONAL — $10.50** PER WEEK

Please Quote when ordering **E•VALUE CODE B240306 - 470304**

DELL DIMENSION™ L DESKTOP



- Intel® Pentium® III Processor 800MHz
- Intel® 810e Chipset / 64MB 100MHz SDRAM / 10GB[1] HDD
 - ▶ **UPGRADE TO: 128MB SDRAM $224***
- Intel® 3D Direct AGP Graphics (Up to 11MB Shared Dynamic Video Memory Technology)
- 48X CD-ROM / 15" Colour Monitor (13.8"v.i.s.)
 - ▶ **UPGRADE TO: 17" Colour Monitor (15.9"v.i.s.) $204***
- Microsoft® Windows® Millennium Edition
- Microsoft® OEM Works Suite 2000
- 1-Year Limited Warranty
- **SAVE $50[2], OFF ORIGINAL $1,449 PRICE TILL 30/3/01**

NOW $1,399* PRICE INCLUDES GST. DELIVERY ADDITIONAL — $12.30** PER WEEK

Please Quote when ordering **E•VALUE CODE B240307 - 470304**

DELL DIMENSION™ 8100 DESKTOP-DELL MOVIE STUDIO



- Intel® Pentium® 4 Processor 1.4GHz
- Intel® 850 Chipset / 128MB RDRAM / 20GB[1] HDD / 8X CD-RW
- Intergrated 10/100 Ethernet Controller
- **64MB DDR nVidia GeFORCE3 4x AGP Graphics Card**
- SoundBlaster Live! Value 576Voice Sound Card
- Harman Kardon Speakers
- 17" Color Monitor (15.9"v.i.s.)
- Microsoft® Windows® Millennium Edition
- Microsoft® OEM Works Suite 2000
- 3-Years Limited Warranty ■ 56K Modem
- IEEE+394 PCI card with Digital Video Editing Sofware
- **SAVE $200[2], OFF ORIGINAL $3,899 PRICE TILL 30/3/01**

NOW $3,699* PRICE INCLUDES GST. DELIVERY ADDITIONAL — $30.75** PER WEEK

Please Quote when ordering **E•VALUE CODE B240316 - 470304**

DELL INSPIRON™ 2100 G700ST NOTEBOOK



Ultra-Light

- Mobile Intel® Pentium® III Processor 700MHz featuring Intel® Speedstep™ technology
- 64MB SDRAM / 5.0GB[1] HDD / Integrated 10/100 LAN Card
- 4MB AGP 2xATI RAGE MOBILITY M™ 3D Video / 3.5" FDD / 24X CD-ROM / 12.1" SVGA TFT Screen (1024x768)
- Microsoft® Windows® 98 Second Edition
- Microsoft OEM Works Suite 2000
- Integrated 56K Modem / Carry Case
- 1 Year Limited Warranty (Next Business Day On-Site[4] Response)
- **FREE 64MB RAM TILL 30/3/01**

NOW $3,499* PRICE INCLUDES GST. DELIVERY ADDITIONAL — $29.20** PER WEEK

Please Quote when ordering **E•VALUE CODE B540317 - 470304**

DELL INSPIRON 3800 C600ST NOTEBOOK



Value Notebook

- Mobile Intel® Pentium® III Processor 600MHz featuring Intel® Speedstep™ technology
- 64MB SDRAM / 5.0GB[1] HDD / 8MB ATI RAGE MOBILITY M1 3D VIDEO 2X AGP
- 3.5" FDD / 24X CD-ROM / 12.1" SVGA TFT Screen (800x600)
- Microsoft® Windows® Millennium Edition
- Microsoft OEM Works Suite 2000
- 1-Years Limited Warranty (Next Business Day On-Site[4] Response)
- **FREE 64MB RAM TILL 30/3/01**

NOW $2,599* PRICE INCLUDES GST. DELIVERY ADDITIONAL — $22.80** PER WEEK

Please Quote when ordering **E•VALUE CODE B540313 - 470304**

DELL INSPIRON™ 4000 G650GT NOTEBOOK



Road Warrior

- Mobile Intel® Pentium® III Processor 650MHz featuring Intel® Speedstep™ technology
- 64MB SDRAM / 5GB[1] HDD / 8MB ATI RAGE MOBILITY-128 3D Video / 3.5" FDD
- 24X CD-ROM / 14.1" XGA TFT Screen (1024x768)
- Microsoft® Windows® Millennium Edition
- Microsoft OEM Works Suite 2000
- 1-Year Limited Warranty (Next Business Day On-Site[4] Response)
- **FREE 128MB RAM TILL 30/3/01**

NOW $2,899* PRICE INCLUDES GST. DELIVERY ADDITIONAL — $25.35** PER WEEK

Please Quote when ordering **E•VALUE CODE B540314 - 470304**

DELL INSPIRON™ 4000 G800GT NOTEBOOK



Road Warrior

- Mobile Intel® Pentium® III Processor 800MHz featuring Intel® Speedstep™ technology
- 64MB SDRAM / 10GB[1] HDD / 8MB ATI RAGE MOBILITY-128 3D Video / 3.5" FDD
- 8X DVD-ROM / 14.1" XGA TFT Screen (1024x768)
- Microsoft® Windows® Millennium Edition
- Microsoft® OEM Works Suite 2000
- Carry Case ■ Internal mini-PCI 56k modem
- 1-Year Limited Warranty (Next Business Day On-Site[4] Response With International Coverage[3])
- **FREE 128MB RAM TILL 30/3/01**

NOW $3,599* PRICE INCLUDES GST. DELIVERY ADDITIONAL — $29.95** PER WEEK

Please Quote when ordering **E•VALUE CODE B540318 - 470304**

DELL INSPIRON™ 8000 G800VT NOTEBOOK



Ultimate Performer

- Mobile Intel® Pentium® III Processor 800MHz
- 64MB SDRAM / 5.0GB[1] HDD / 8MB ATI MOBILITY M4, 3D Video
- 3.5" FDD
- 8X DVD-ROM ▶ **ADD: CD-RW $710***
- 15" Super XGA+ TFT Screen (1400x1050)
- Microsoft® Windows® Millennium Edition
- Microsoft® OEM Works Suite 2000
- Internal Mini-PCI 56K Capable Fax Modem/ Carry Case
- 3-Year Limited Warranty (With 1st Year Next Business Day On-Site[4] Response)
- **FREE 128MB RAM TILL 30/3/01**

NOW $4,299* PRICE INCLUDES GST. DELIVERY ADDITIONAL — $35.85** PER WEEK

Please Quote when ordering **E•VALUE CODE B540321 - 470304**

DELL INSPIRON™ 8000 G1000U NOTEBOOK



Ultimate Performer

- Mobile Intel® Pentium® III Processor 1000MHz
- 128MB SDRAM / 20GB[1] HDD / 32MB AGP 4x ATI MOBILITY M4™ 3D Video / 3.5" FDD
- 8X DVD-ROM / 15" Ultra XGA TFT Screen (1600x1200)
- Microsoft® Windows® Millennium Edition
- Microsoft® OEM Works Suite 2000
- Internal Mini-PCI 56K Capable Fax Modem/ Leather Case
- 3-Year Limited Warranty (With 1st Year Next Business Day On-Site[4] Response)
- **FREE 128MB RAM TILL 30/3/01**

NOW $5,799* PRICE INCLUDES GST. DELIVERY ADDITIONAL — $44.30** PER WEEK

Please Quote when ordering **E•VALUE CODE B540329 - 470304**

DELL PRECISION™ WORKSTATION 330



- Intel® Pentium® 4 Processor 1.3GHz
- Intel® 850 chipset ■ 256MB PC600 Non-ECC RDRAM
- 20GB[1] Ultra ATA Hard Drive
- Integrated 3Com 10/100 Ethernet Controller
- Integrated Dual ATA-100 EIDE Controller
- Integrated 16-Bit Sound ■ 17" Colour Monitor (15.9" v.i.s.)
 - ▶ **ADD : Additional 17" Trinitron Monitor (16" v.i.s) $891***
- 64MB Nvidia Quadro2 Pro 4XAGP Graphics Card (Dual Monitor Capable)
- 48X Max Variable EIDE CD-ROM Drive
- Microsoft® Windows® 2000 Professional
- 3-Year Limited Warranty (with 3-Year Next Business Day On-Site[4] Service)

$3,999* PRICE INCLUDES GST. DELIVERY ADDITIONAL — $33.27** PER WEEK

Please Quote when ordering **E•VALUE CODE B620320 - 470304**

DELL POWEREDGE™ 300 SERVER



- Intel® Pentium® III Processor 800MHz
- 64MB SDRAM With ECC (Upgradeable to 1GB)
- 10GB[1] IDE Hard Drive
- Intel® Pro 100+ NIC
- Integrated IDE Controller
- 20/48X EIDE CD-ROM Drive
 - ▶ **ADD : APC 700VA UPS Backup Power Supply $769***
- 3-Year Limited Warranty (With 1-Year Next Business Day On-Site[4] Service)

$1,899* PRICE INCLUDES GST. DELIVERY ADDITIONAL — $16.65** PER WEEK

Please Quote when ordering **E•VALUE CODE B420309 - 470304**

DELL POWEREDGE™ 1400 SERVER



- Intel® Pentium® III Processor 866MHz (Dual Processor Capable)
 - ▶ **ADD : Additional 2nd Intel® Pentium® III processor 866MHz $708***
- 128MB SDRAM With ECC (Upgradeable to 2GB)
 - ▶ **UPGRADE TO: 192MB SDRAM With ECC $101***
- 9GB[1] Ultra 160 SCSI Hard Drive
- Integrated Intel® Pro100+ NIC / Integrated Ultra 3 / LVD SCSI Controller
- 20/48x EIDE CD-ROM Drive
- 3-Year Limited Warranty (With 1-Year Next Business Day On-Site[4] Service)

$2,469* PRICE INCLUDES GST. DELIVERY ADDITIONAL — $21.50** PER WEEK

Please Quote when ordering **E•VALUE CODE B420312 - 470304**

Dell recommends Windows® 2000 Professional for Business

*DELL'S NORMAL TERMS AND CONDITIONS APPLY AND ARE AVAILABLE ON REQUEST. PLEASE CALL OR REQUEST ONLINE. **Prices specifications and availability subject to change without notice. Delivery charges are specified in quotation.** All discount/promotion program. Dell, the Dell logo, Dell Dimension, Inspiron, PowerEdge, Precision and EValue are trademarks of the Dell Computer Corporation. **Dell can arrange for leasing to business customers for business use. All figures are indicative based on a 36 compliance by customer with all applicable conditions. If accepted, first payment is due prior to delivery. The monthly payments set out in this advertisement apply to business leases only, non-business customers must call for applicable rates, terms and conditions for cons of others. [1]For Hard Drives GB means one billion bytes, accessible capacity varies depending on operating environment. [2]Savings value inclusive of GST. [4]On-site service provided by independent 3rd Party service provider and may not be available in remote locations. Tec^[3]

property of their owners. [3]All recording must be compliant with international copyright laws. Copyright 2000 Dell Computer Corporation. All rights reserved. Intel, the Intel Inside logo and Pentium are registered trademarks and SpeedStep and Celeron are trademarks o

ELL™ YOUR FIRST CHOICE? CALL NOW.

1GHz FOR ONLY $1,799* TILL MARCH 30



Dell Dimension™ 4100 series.

Pick up the Dell Dimension™ 4100 and you'll be ready for anything. With 1GHz of power and the latest Intel® 815e chipset featuring up to 4X AGP graphics support and 133 MHz FSB, the Dimension™ 4100 offers exceptional expandability and support for the latest PC peripherals, with high-end performance now and well into the future.

SAVE $200[2] **OFF ORIGINAL $1,999 PRICE**
Valid till March 30, 2001

DELL DIMENSION™ 4100 DESKTOP

- Intel® Pentium® III Processor 1GHz
- Intel® 815e Chipset / 128MB SDRAM / 10GB[1] HDD
 - ▶ UPGRADE TO: 20GB[1] Ultra ATA Hard Drive $122*
- 16MB ATI RAGE 128Pro 4X AGP Graphics Card
- 48X CD-ROM
- 15" Colour Monitor (13.8"v.i.s.)
 - ▶ UPGRADE TO : 19" Trinitron Monitor (18.0"v.i.s.) $917*
- Microsoft® Windows® Millennium Edition
- Microsoft® OEM Works Suite 2000
- Norton Anti-Virus 2000 - OEM
- 3-Years Limited Warranty

NOW **$1,799*** PRICE INCLUDES GST. DELIVERY ADDITIONAL
$15.65** PER WEEK

Please Quote when ordering
E•VALUE CODE B240309-470304

GREAT VALUE, FREE UPGRADE



Dell Inspiron™ 4000 shown with optional colour kit.

Inspiron™ 4000
"The best performing and feature rich notebook... under $5,000"
Sydney Morning Herald, IT October 31, 2000

FREE 128MB RAM
Valid till March 30, 2001

The Dell Inspiron™ 4000 gives you a choice of processor speed (up to 850MHz) outstanding performance and ATI mobility 128 Video for blazing fast 2D and 3D graphics. This is backed by up to 20GB[1] of storage space, SDRAM expandable to 512MB and media bay flexibility. Pick an optical device, a second battery, or an internal floppy disk drive. Plus, choose your colour with an optional colour kit. – all in a slimline 2.36kg package.

DELL INSPIRON™ 4000 G700GT NOTEBOOK

- Mobile Intel® Pentium® III Processor 700MHz featuring Intel® Speedstep™ technology
- 64MB SDRAM / 5.0GB[1] HDD / 8MB ATI RAGE MOBILITY-128 2X AGP Video
- 3.5" FDD / High-fidelity Audio SoundBlaster Compatible
- 24X CD-ROM
- 14.1" XGA TFT Screen (1024x768)
- Microsoft® Windows® Millennium Edition
- Microsoft OEM Works Suite 2000
- Carry Case
 - ▶ UPGRADE TO: Leather Carrying Case $72*
- 1-Year Limited Warranty (Next Business Day On-Site[4] Response)

NOW **$3,099*** PRICE INCLUDES GST. DELIVERY ADDITIONAL
$26.90** PER WEEK

Please Quote when ordering
E•VALUE CODE B540315-470304

1RU RACK SERVER FOR ONLY $3,569*

Check out our new ultra dense rack mountable server – the Dell PowerEdge™ 1550. If you need to maximise performance in a space constrained data centre environment, this 1U unit is your machine. It supports up to two Intel® Pentium® III processors 1GHz, 3 hot-pluggable 1 inch, 10000rpm hard drives, 2GB of RAM and two 64-bit/66 MHz PCI slots.



NEW ULTRA THIN GENERAL PURPOSE SERVER

DELL POWEREDGE™ 1550 SERVER

- Intel® Pentium® III Processor 866MHz
- 256KB Internal L2 Cache
- 128MB 133MHz SDRAM With ECC (Upgradeable to 1GB[1])
- 9GB[1] Ultra 160 SCSI Hard Drive 10K
- 3.5" 1.44MB Diskette Drive
- Integrated Dual Intel® Pro 10/100+ NIC
- 12/24x EIDE CD-ROM Drive
- 3-Year Limited Warranty (With 3-Year Next Business Day On-Site[4] Service)

$3,569* PRICE INCLUDES GST. DELIVERY ADDITIONAL
$26.70** PER WEEK

Please Quote when ordering
E•VALUE CODE B420318-470304

intel inside
pentium® III

INSTALLATION SERVICE AVAILABLE
Ask about our range of easy-to-purchase installation options – from basic to comprehensive set-ups.

DELL™

efforts will be made to check for errors in typography and photography; however inadvertent errors may occur for which Dell may not be responsible. All prices shown are inclusive of GST. Certain configurations can not be changed. Above prices can not be combined with any other nonth lease. Lease rates are current at the time of publication and are inclusive of GST, stamp duty and FID. Actual monthly payment depends on the exact configuration selected, the term of the lease and then applicable rates. Every lease is subject to credit approval, availability and mer leases. Microsoft and Windows are registered trademarks of Microsoft Corporation. Other trademarks and trade names may be used in this document refer to either the entities claiming marks and names of their products. Dell disclaims proprietary interest in the marks and the names nicians shall be dispatched following telephone technical support. [1]Source: Intel MAP, additional performance testing data available on request. [2]Technologies that underlie the B2B space include Flash, 3D Visualisation, load pages, Java and Xml. [3]Other brands and names are the ntel Corporation.

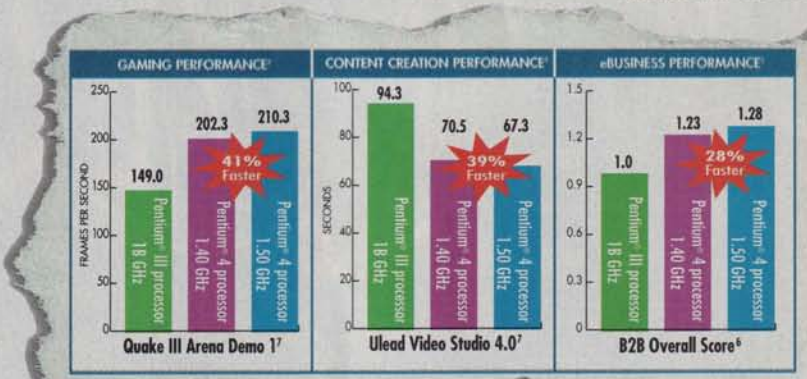
DELD5030/APC/GSPREAD

LATEST TECHNOLOGY FOR ONLY $2399*



Dell Dimension™ 8100 pictured with optional 19" Monitor as well as Altec Lansing ADA-885 Speakers with Subwoofer

The Dell Dimension® 8100 is the next generation in PCs. Powered by the new Intel® Pentium® 4 processor (for speeds of 1.3 to 1.5GHz), the system delivers record breaking performance on multimedia intensive tasks, content creation and games. Just take a look at the benchmark tests. What's more, this amazing performance won't be threatened by bottlenecks, thanks to the newly engineered Hyper Pipelined Technology and 400MHz System Bus with dual channel RDRAM. And with a price of just $2,399*, you certainly are getting the latest technology at a great price.



DELL DIMENSION™ 8100 DESKTOP

- Intel® Pentium® 4 Processor 1.3GHz
 - ▶ UPGRADE TO: Intel® Pentium® 4 Processor 1.4 GHz $299*
- Intel® 850 Chipset
- 128MB RDRAM
 - ▶ UPGRADE TO: 256MB RDRAM $448*
- 10GB[1] HDD
- Intergrated 10/100 Ethernet Controller
- 32MB NVIDIA GeForce2 MX 4X AGP Graphics Card
- 48X CD-ROM
 - ▶ ADD: Altec Lansing ADA-885 Dolby® Digital Ready Speakers with Subwoofer $407*
- 17" Colour Monitor (15.9"v.i.s.)
 - ▶ UPGRADE TO: 19" Trinitron Monitor (18.0"vis) $713*
- Microsoft® Windows® Millennium Edition
- Microsoft® OEM Works Suite 2000
- Norton Anti-Virus 2000 - OEM
- 3-Years Limited Warranty

SAVE $200[2] OFF ORIGINAL $2599 PRICE — VALID TILL MARCH 30, 2001

NOW $2,399* PRICE INCLUDES GST. DELIVERY ADDITIONAL

$21.00** PER WEEK

Please Quote when ordering
E•VALUE CODE B240313 - 470304

1300 303 107

CALL DELL NOW MON TO FRI 8AM-8PM (EST)

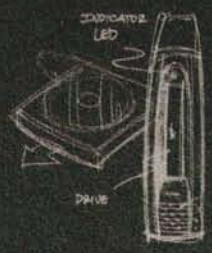
DELL™

Intel, the Intel Inside logo and Pentium are registered trademarks of Intel Corporation. DELD5030/APC/RH

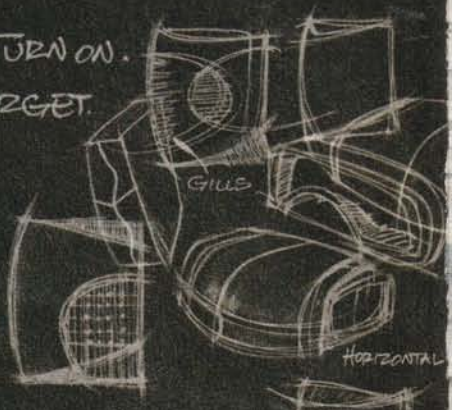
8 NOV 99 PRODUCT: e-PC

OVERALL DESIGN OBJECTIVE:

PLUG IN. TURN ON. FORGET.

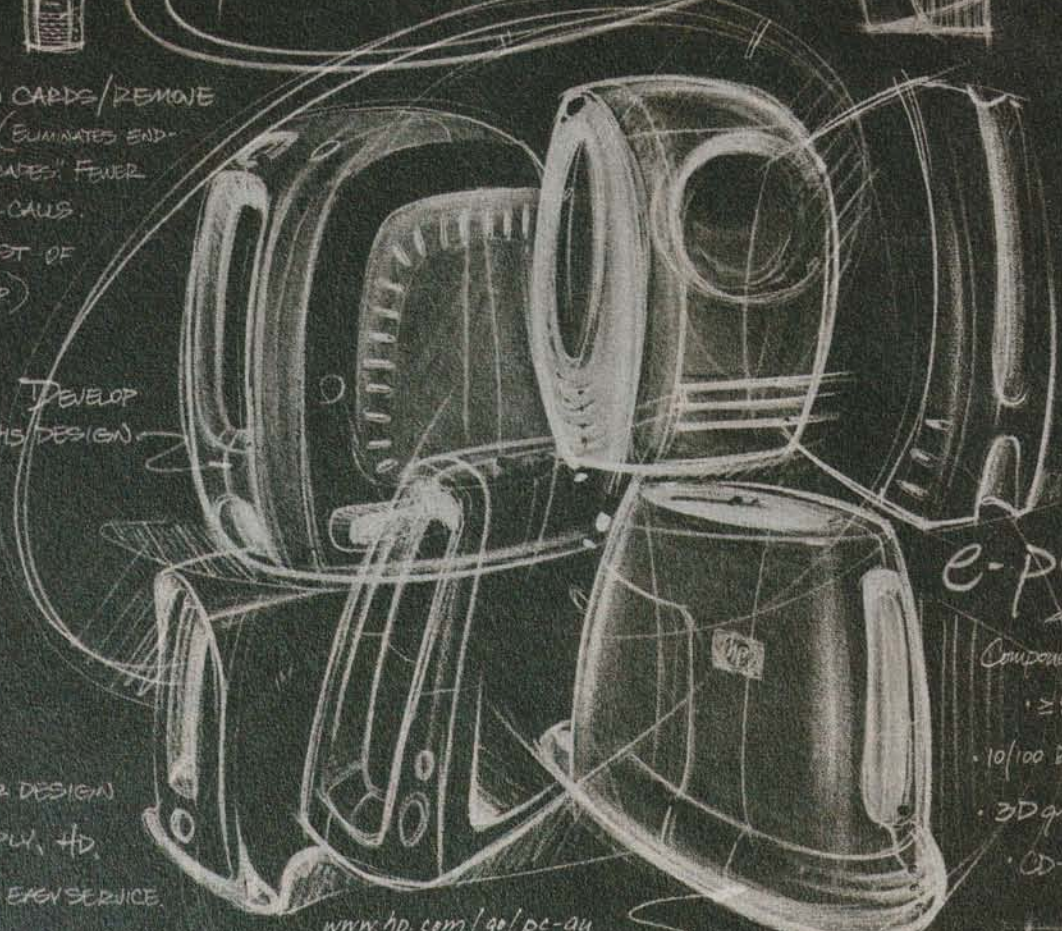


KEEP IT SIMPLE



BUILD IN CARDS/REMOVE SLOTS (ELIMINATES END-USER "UPGRADES." FEWER HELP DESK CALLS. LOWER COST OF OWNERSHIP)

DEVELOP THIS DESIGN.



e-PC

Component Wish List:

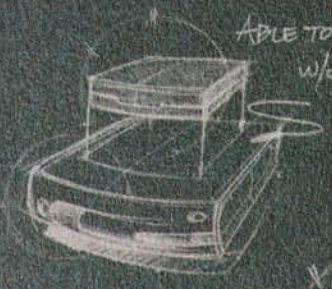
- ≥ 8 GB HD
- 10/100 BASE-TX Eth.
- 3D graphics and
- CD-ROM drive



MODULAR DESIGN (PWR. SPLY, HD, BOX) FOR EASY SERVICE.

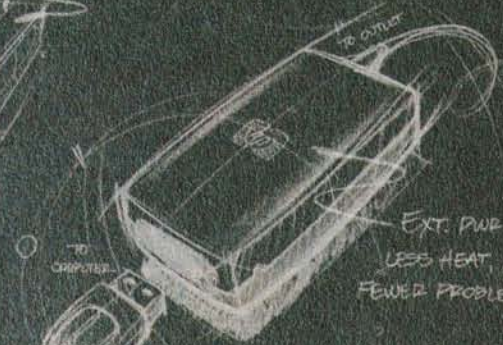
www.hp.com/go/pc-au

ABLE TO REMOVE HD W/O TOOLS.

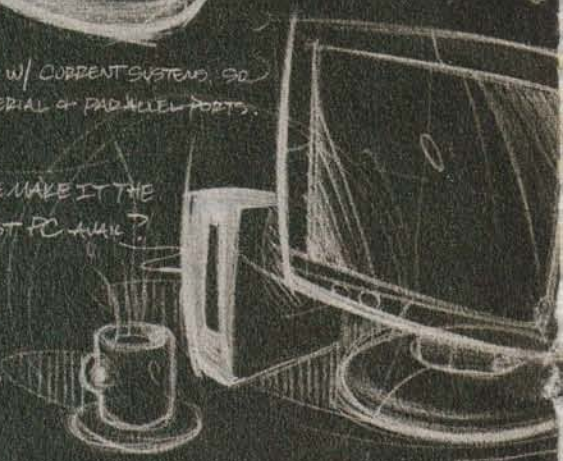


MUST BE COMPATIBLE W/ CURRENT SYSTEMS, SO INCL. USB, SERIAL & PARALLEL PORTS.

CAN WE MAKE IT THE SMALLEST PC AVAIL.?



EXT. PWR SPLY MEANS LESS HEAT, LESS NOISE, FEWER PROBLEMS.



CABLE LOCKS FOR INCREASED SECURITY.



HP RECOMMENDS WINDOWS® 2000 PROFESSIONAL FOR BUSINESS.

www.hp.com/go/pc-au



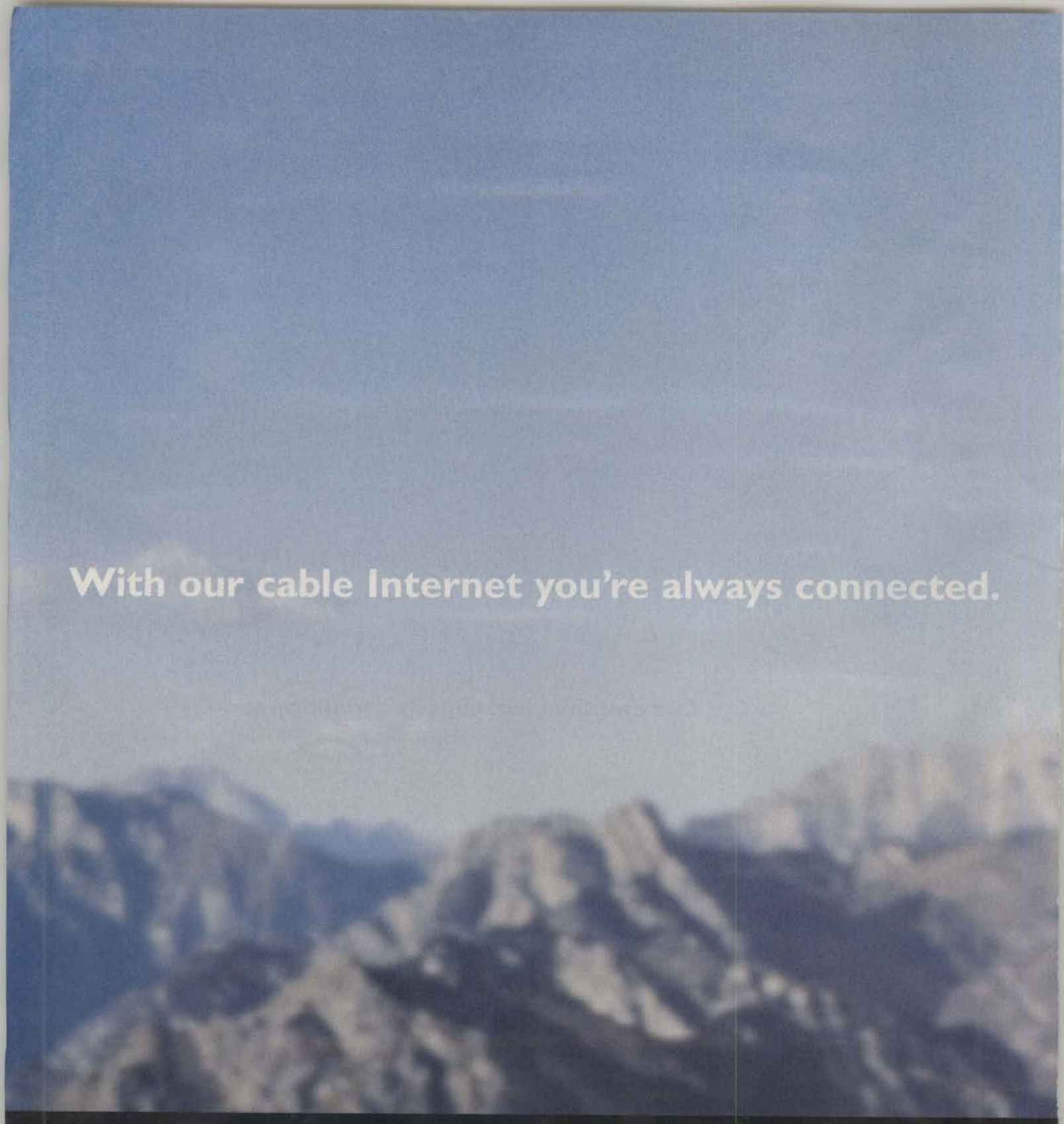
Our best thinking, eagerly awaiting yours.

invent

Contact your local hp reseller, call 13 23 47 or visit www.hp.com/go/pc-au

Intel, the Intel Inside Logo and Pentium are registered trademarks of Intel Corporation. Windows is a registered trademark of Microsoft Corporation. ©2001 Hewlett-Packard Company. All rights reserved.

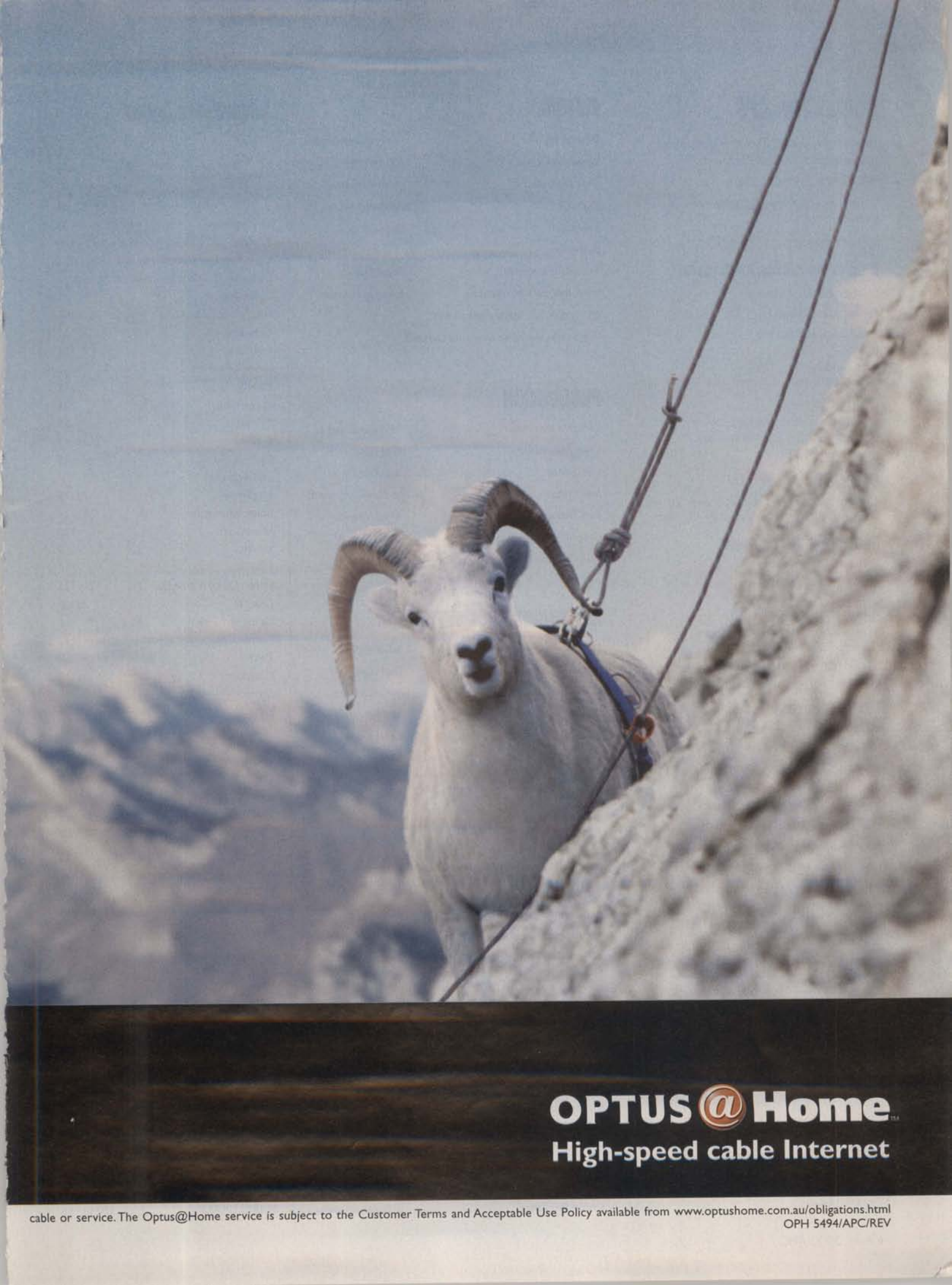
HPP 0041/APC/C



With our award winning high-speed cable Internet whenever your computer is on you're automatically online. That means no frustrations from dialling up or tying up your phone line. Paying for it is easy too, with a flat monthly fee and one-off installation charge*. And for even better value you can select one of our Choices packages.

For further information or to register visit our Web site www.optushome.com.au or phone 1800 555 609.

*Optus@Home is available in Optus cabled areas in Sydney, Melbourne & Brisbane. For technical and commercial reasons not all homes can be connected to the Optus Optus@Home is a trade mark of Excite@Home Australia Pty Ltd.



cable or service. The Optus@Home service is subject to the Customer Terms and Acceptable Use Policy available from www.optushome.com.au/obligations.html

OPH 5494/APC/REV

CONTENTS

Contacting *APC*

For general queries and comments, email is *APC*'s preferred means of communication:

apc@acptech.net

You can also use the feedback form on our Web site:

apcmag.com/feedback

Reader enquiries/back issues

Contact **Editorial Assistant**

Phone **(02) 9288 9123**

Email **apc@acptech.net**

Post **APC**
PO Box 4088
Sydney NSW 1028

Fax **(02) 9264 6320**

We run out of most issues quickly, so please contact the editorial assistant before sending a cheque.

Cover CDs

If you have any problems with our cover CDs, refer to the Help section on the back of the CD insert.

Reprints and copyright

Contact **Heather Milley**

Phone **(02) 9332 2675**

Advertising enquiries

If you're interested in advertising in *APC*, please contact us on:

Phone **(02) 9288 9150**
or visit **acptech.net/advertising**

Media releases

Media releases can be emailed to newswire@acptech.net. Please note that due to the volume of mail we receive, we are unable to confirm receipt of releases.

Subscriptions

One year's subscription is just $79!

For subscription enquiries or problems:

Phone **13 61 16**

Email **subsquery@acp.com.au** or visit **magshop.com.au**

For full details see our subscription ad on page 112.

Editorial submissions

Please let us know if you have an idea for an article or review you'd like *APC* to cover.

If you'd like to write for *APC*, please email **apc@acptech.net** a brief résumé with an outline of your experience and interests, a sample of your writing and an outline of the article you have in mind. We appreciate submissions, but can't guarantee a reply.

Australian Personal Computer is published by ACP Tech, a division of ACP Publishing Pty Ltd (ACN 053 273 546). Printed by Hannanprint Pty Ltd. Material contained within *Australian Personal Computer* is protected under the Commonwealth Copyright Act 1968. No material may be reproduced in part or in whole without the written consent of the copyright holders. Distributed by Network Distribution Company, 54 Park Street, Sydney NSW 1028. Phone: (02) 9282 8777

EDITORIAL

Deputy Editor	Vanessa Richardson
Senior Reviewer	Darren Ellis
First Take Editor	Alex Kidman
Journalist	William Maher
Journalist	Fiona Angus
Journalist	Daniel Gardiner
Technical Assistant	Ryan Shaw
Book Review Coordinator	Lindsay Hayman

Editorial email **apc@acptech.net**

Press releases **newswire@acptech.net**

PRODUCTION

Creative Director	Michèle Heibel
Chief Sub-Editor	Gail Lipscombe
Sub-Editor	Suzanne Fraser
Sub-Editor	Jocelyn Hungerford
Sub-Editor	Megan Smith
Graphic Artist	Craig Carroll
Film Coordinator	Ruth Hayes

ELECTRONIC PRODUCTION

Electronic Production Editor	Suzanne Quill
Notes/Web Developer	Dan Lowden
CD/Web Assistant	Nola Camden
CD/Web Assistant	Lachlan Grant
CD/Web Assistant	Laura Kane
CD/Web Assistant	Lawrence Kwek
CD/Web Assistant	Mark Reay

ADVERTISING

National Advertising Manager	Wade Gilmore
Senior Account Manager	Sumit Roy
Account Manager	Amorette Judd
Account Manager	Jeanette Gray
Advertising Production	Susan Harrison

Advertising enquiries (02) 9288 9150

Advertising email **wgilmore@acp.com.au**

ACP TECH

Publishing Director	Glenn Rees
Marketing Brand Manager	Mark Harrison
Group Creative Director	Michèle Heibel
Assistant Brand Manager	Helen Duncan
CEO	John Alexander
Group Publisher	Jill Baker

Advertisers' index

Accsoft	107
American Power	65
Canon	35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 69
City Software	81
Compaq	Gatefold, inside back cover
Consumer Electronics	103
Dell	Gatefold, inside front cover, 1
DirectOne	61
Focal Point Computing	109
Gateway	32, 33
Hallmark	119
Hewlett-Packard	2, 3
Hitachi	21
In Learning	121
iPrimus	25
Kyocera	16, 17
Lan1	23
LG Electronics	7
MacSense	73, 75
Magic Moments	12, 13
MicroGram	127
Minolta	19
MSI	117
Ocean Office Automation	124, 125
One.Tel	28, 29
Optus	4, 5
Pioneer Computers Australia	131
PlesTel	59
Quantum	114
Servex	85
Sony	9
TPG Internet	Outside back cover
Viewsonic	97

PC SUPERMARKET

APD	147
Australian Computer Recyclers	*156*
Australian Computers Online	153
Australian PC Accessories	151
Blue Way	169
Corporate Software	154, 155
EcomComputers	145
Elsa	152
Everything Linux	146
Focus	150
Forté	158, 159
IT Computers	164
Lab Systems	157
Microtech	165
NASA	166, 167
New Reality	160, 161
PC Club	162
PC View	168
Peripherals Plus	163
Sigmacom	148
Universal Micro	149

MARKETPLACE 170 to 176

LGELEC0398/APC



This space is brought to you by LG's ultra slim LCD monitor.

LG's space saving LCD monitors are available in a choice of 15.1˝ and 18.1˝ screens.
For more information on LG's range of monitors call NSW Head Office: (02) 9684 8000 or visit **www.lge.com.au**

LG
Life's Good

Rumours of the death of the PC are greatly exaggerated.

All is not lost



Glenn Rees

Glenn Rees is publishing director of ACP Tech and can be contacted at apc@acptech.net.

It's been a lousy financial year for most of the IT industry. Many dot com enterprises have failed and thousands of jobs have been lost across the industry.

Gateway, Dell, Apple, 3Com and many other blue-chip IT companies have announced disappointing earnings, profit warnings or even, in the case of Apple, losses for the last quarter. Even Microsoft — well known for conservative, easily achieved profit forecasts — was forced to announce in December that its earnings for the second quarter would be 5% or 6% lower than previously expected. Once the force behind a worldwide move towards the 'new economy', the US is now leading the retreat.

It's not just that the dot com bubble has burst — most of us were expecting that. More disturbingly, PC sales have levelled off. According to market research firm PC Data, annual sales of PCs in the US dropped for the first time ever — down by 1% in 2000 from 1999. Australia is also suffering, with retailers complaining of relatively poor pre and post Christmas sales.

So what's the problem? What has brought the impressive year-on-year growth to a shuddering halt? The reasons, like all things to do with the economy, are pretty complicated. That's because the economy is all about people, as well as money. First, there was the hangover from Y2K. With businesses spending so much on upgrading systems in 1999 to ensure Y2K compliance, why would they want to spend more money on IT during the following year or two, even if they could afford to? There's now a similar dot com hangover. At the other end of the spectrum, sales of PC games have suffered because of cheaper, more convenient game consoles.

Microsoft and Intel dominate the market, so the IT industry is heavily reliant on them to maintain momentum and growth across the industry.

When Microsoft doesn't give us compelling reasons to upgrade our operating systems or office suites, why should we upgrade our software or PC? Not that there's anything particularly wrong with Windows Me, Windows 2000 or Office 2000. It's just that many people are quite happy with Windows 95/98/NT and Office 97.

It's the same story with Intel and its Pentium 4. As Darren Ellis says in his review of Pentium 4 systems on page 86, it's just not inspiring. This is the nub of the problem for the industry. Consumers and business buyers need a good reason to buy. Forget productivity and cost-benefit arguments for buying computer products. They are the reasons we give ourselves once we've made up our minds to buy. At the moment, we just don't really want to.

> The Internet will gradually become a more viable medium.

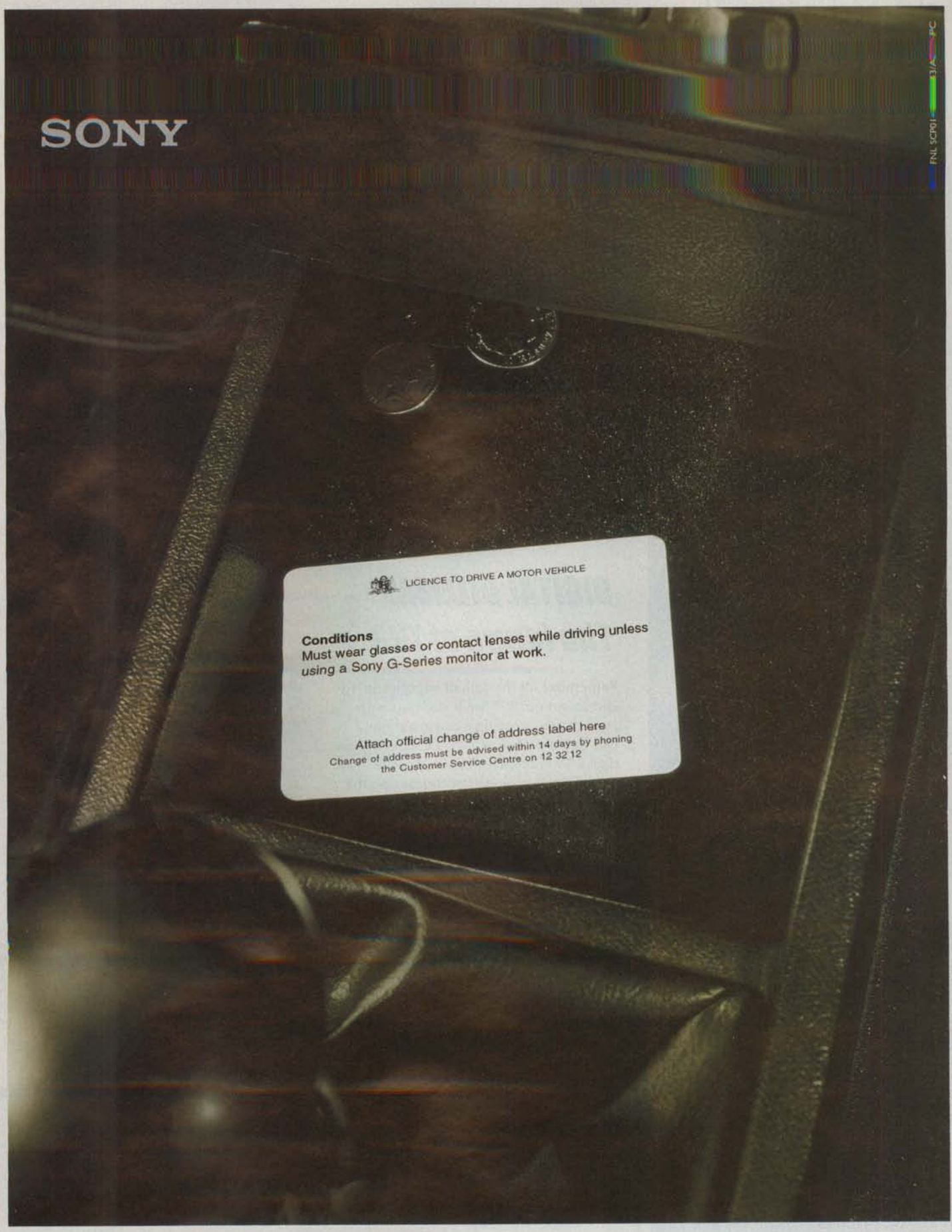
However, it's not all bad news. Some market segments, such as CD burners, MP3 players and rippers, and digital cameras are doing very well.

Microsoft will release Office XP mid-year, but even more critical will be the release of Windows XP , the successor to both Windows Me and Windows 2000. This has the potential to give the industry a huge boost.

Further into the future, the Internet will gradually become a more viable medium, as new technologies and techniques for generating revenue and saving costs are developed. Dot coms and the dot com ventures of established businesses will start to make significant profits, sparking a real, sustainable dot com boom.

The PC is not dead. There's a good chance that we'll be buying 10GHz PCs in five years, according to Chuck Gwyn in a CNet profile. The general manager and program director of the Extreme Ultraviolet LLC consortium, Gwyn is in charge of creating lithography tools that will enable chip makers to build processors running at this mind-boggling speed.

Now that's inspiring.



Sitting in front of a screen all day can really take its toll on your eyes. The brighter, ultra-sharp images produced by Sony's latest FD Trinitron technology mean you'll never get tired of looking at a G-series monitor. www.sony.com.au or phone 1300 13 7669. **It's a Sony.**



Available in 19" (CPD-G420) and 21" (CPD-G520).

CONTENTS

COVER STORIES

14 **CD Contents**
31 **First Take Contents**
103 **Corporate IT Contents**
115 **Workshop Contents**
6 **Advertisers' Index**
6 **Contacts**

48 **Readers' Say**
50 **Flashback**
52 **Two Bits**
58 **Price Watch**
Does shopping online offer any real savings?
60 **Cutting Edge**
Quantum computing

AFTER HOURS

177 **GameZone**
Sacrifice; No One Lives Forever; Battle Isle: The Androsia War; Sheep; Hitman Codename 47; Quake III: Team Arena; Resident Evil 3: Nemesis; Gunman Chronicles

181 Gamespy

182 **Best Ever Games**
Sports games

184 **Review Special**
Memo software

187 **From the Stack**
Find out about computer logic, communicating in the digital age and the mystery of the human brain

188 **Random Notes**
APC talks to four very different acts about the future of their music, and MP3s

190 **Web File**
Where do you want to go today? This month, *APC* tours a variety of local and international travel sites

192 **Chip Chat**
APC offers some sage advice on managing staff effectively with the Aura interactor



Intelligence agents, corporate spies and even people like you have found ways to exploit the Internet to gain secret information. Forget invisible ink; these days spying is more likely to involve a PC and a Web browser. *APC* investigates how new laws and electronic spying tools make you vulnerable to covert surveillance.

62

Email encryption, cookie washers, firewalls, email anonymisers and spyware detectors are all ways to protect your PC from unwanted intruders. *APC* gives you the low-down on these tools and provides you with a comprehensive privacy toolkit on the cover CD.

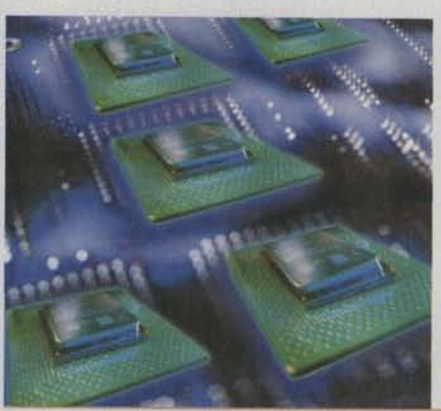
67

DIGITAL DILEMAS
The future of TV?

Remember all the talk of superior image and sound quality, live broadcasts with your choice of multiple camera angles, Net-based data services? *APC* looks at how digital TV is actually performing. We review the first digital set top box on the Australian market, and ponder the future of television.



30



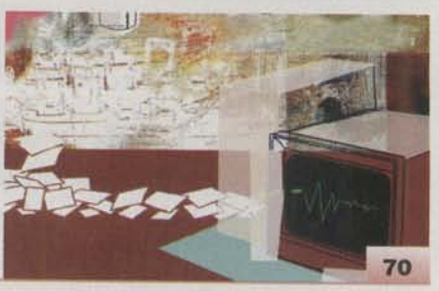
PENTIUM 4 PCs
Intel's pent-up power

The Pentium 4 processor has been slammed in early reviews, but it does have some redeeming features. *APC* explains the inner workings of the chip and tests the latest Pentium 4 machines.

86

E-MEDICINE Just what the doctor ordered

Are Australian patients missing out on potentially life-saving improvements to healthcare while doctors and governments struggle to come to terms with ehealth? *APC* investigates the potential of ehealth and the obstacles that are blocking the transformation of the health system.



70



BURN, BABY BURN
Disc inferno

Whether it's for boring backups or for expanding your MP3 collection far beyond the realm of your hard disk, few people can get by without a CD burner. Thankfully, the days when CD writers were strictly SCSI, not to mention expensive and slow, are over. *APC* Labs tests the latest USB and IDE burners.

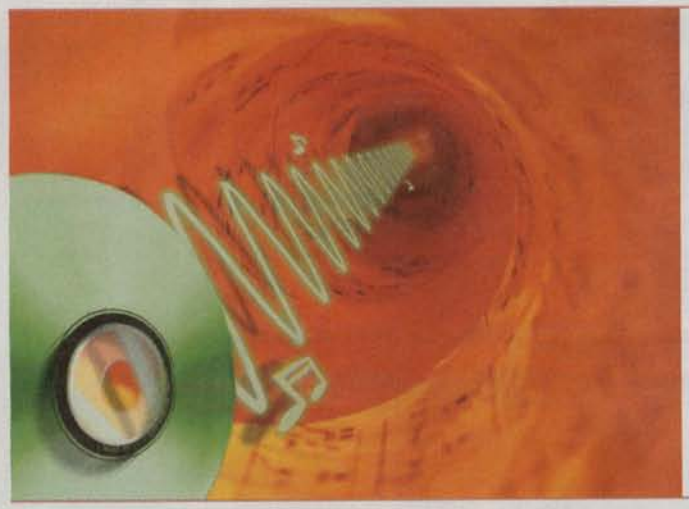
98

A TWISTED CODE

The Human Genome Project has been elevated to the status of a sacred mission and its completion has been described as the greatest scientific event in history. What is its true scientific significance? *APC* examines what the project has actually achieved and explores the thorny ethical issues it raises.



78



LET IT RIP
MP3 rippers

Despite the best efforts of record companies and disgruntled rock stars, the MP3 format is going from strength to strength. Ripping your own audio CDs is now a regular activity for a huge number of PC users. *APC* gets ripping with a stack of the most popular tools, to pick the best and fastest. A great selection of rippers and other audio tools features on this month's cover CD.

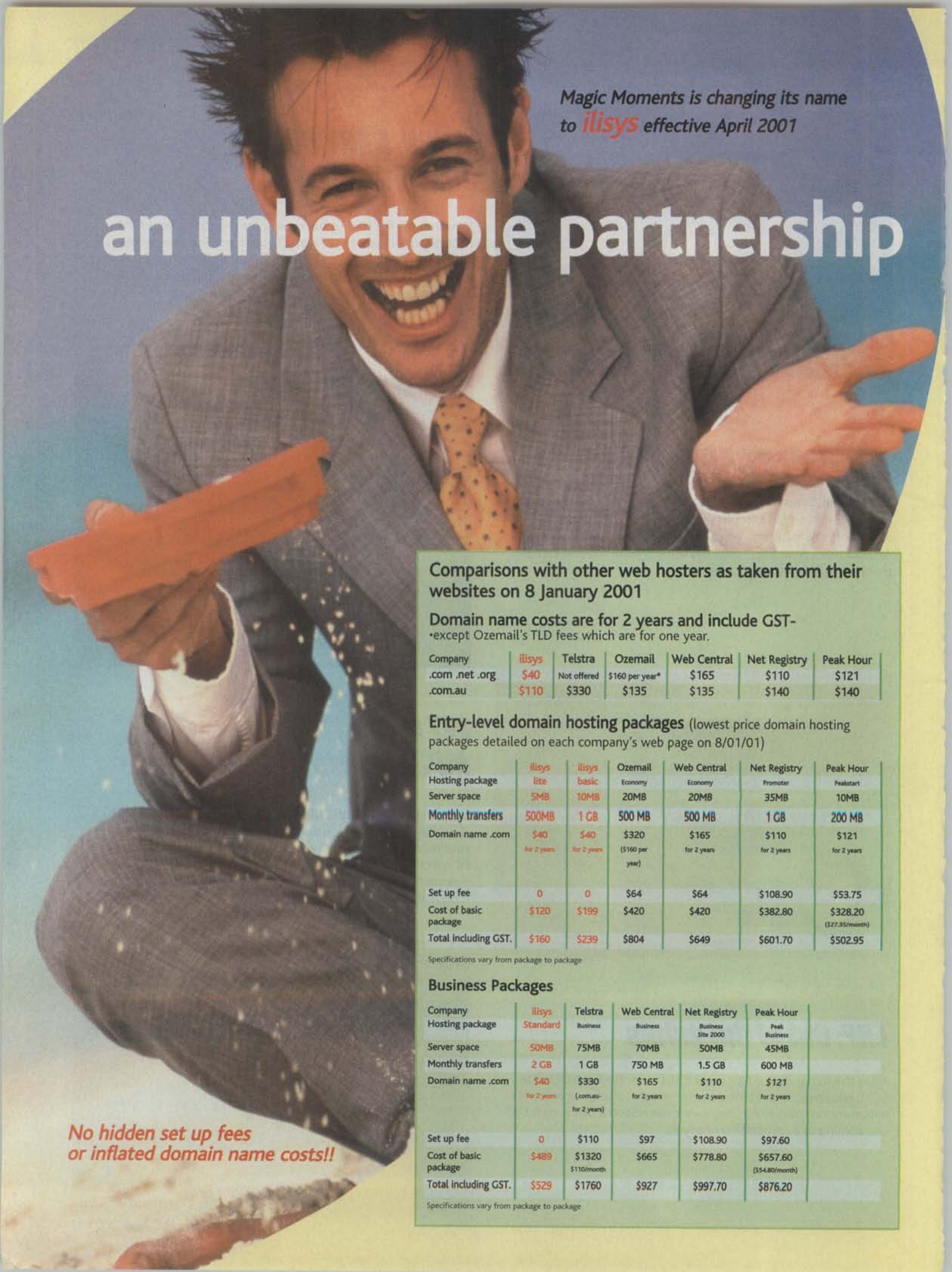
92

ERP: Out of the ashes

After the initial rise of ERP came CRM, then ERM, which led to SCM, ebusiness, then eprocurement, emarketplaces, c-commerce and, most recently, ERP II. Yes, enterprise resource planning is back and coming to a corporation near you.



In Corporate 104



Magic Moments is changing its name to ilisys effective April 2001

an unbeatable partnership

Comparisons with other web hosters as taken from their websites on 8 January 2001

Domain name costs are for 2 years and include GST-

•except Ozemail's TLD fees which are for one year.

Company	ilisys	Telstra	Ozemail	Web Central	Net Registry	Peak Hour
.com .net .org	$40	Not offered	$160 per year*	$165	$110	$121
.com.au	$110	$330	$135	$135	$140	$140

Entry-level domain hosting packages (lowest price domain hosting packages detailed on each company's web page on 8/01/01)

Company	ilisys	ilisys	Ozemail	Web Central	Net Registry	Peak Hour
Hosting package	lite	basic	Economy	Economy	Promoter	Peakstart
Server space	5MB	10MB	20MB	20MB	35MB	10MB
Monthly transfers	500MB	1 GB	500 MB	500 MB	1 GB	200 MB
Domain name .com	$40 for 2 years	$40 for 2 years	$320 ($160 per year)	$165 for 2 years	$110 for 2 years	$121 for 2 years
Set up fee	0	0	$64	$64	$108.90	$53.75
Cost of basic package	$120	$199	$420	$420	$382.80	$328.20 ($27.35/month)
Total including GST.	$160	$239	$804	$649	$601.70	$502.95

Specifications vary from package to package

Business Packages

Company	ilisys	Telstra	Web Central	Net Registry	Peak Hour
Hosting package	Standard	Business	Business	Business Site 2000	Peak Business
Server space	50MB	75MB	70MB	50MB	45MB
Monthly transfers	2 GB	1 GB	750 MB	1.5 GB	600 MB
Domain name .com	$40 for 2 years	$330 (.com.au- for 2 years)	$165 for 2 years	$110 for 2 years	$121 for 2 years
Set up fee	0	$110	$97	$108.90	$97.60
Cost of basic package	$489	$1320 $110/month	$665	$778.80	$657.60 ($54.80/month)
Total including GST.	$529	$1760	$927	$997.70	$876.20

Specifications vary from package to package

No hidden set up fees or inflated domain name costs!!

Quality Web Hosting

at an affordable price

The Magic Moments Group has been in the business of web hosting since 1995 and has prospered through the dot com bubble and bust.

Our group has offices in Britain, Thailand and Australia. We currently provides bespoke hosting solutions to in excess of forty-five thousand domains and we house over six hundred and fifty co-located servers.

ilisys MAGIC MOMENTS

Our Business is to Serve You

ilisys (Magic Moments Internet Asia Pacific Pty Ltd.)
Email : enquiries@ilisys.com.au
Terms: http://www.ilisys.com.au/terms/

Naming Authority Fees

Naming authority fees cover registration for 2 years and include GST

UK domains (.co.uk, .org.uk)	$20
Global domains (.com, .org, .net)	$40
Australian domains (.com.au)	$110

Email & Web Hosting Packages

Reserve $75/yr.

- Single Aliasing
- Single Email Routing
- Web Forwarding or
- MX forwarding

Lite $120/yr.

- 5 mb web/ftp hosting space
- Hosted on Linux Server
- Unlimited e-mail addresses forwarding to a single destination
- Own CGI-BIN
- 500 MB of transfers per month

Basic $199/yr. or $18.50/month

- 10MB web/ftp hosting space
- Unlimited Email addresses
- Virtual Email and multiple forwarding
- Mail Magic (Web Mail)
- Own CGI-BIN, MYSQL and PHP4 support
- Linux or NT server
- FrontPage 98 & 2000 extensions
- Remote control panel via web interface
- Full graphical site statistics
- 1 GB of transfers per month

Plus $275/yr. or $25/month

- 10MB web/ftp hosting space
- 10 POP3 Email boxes
- Unlimited Email addresses
- Virtual Email and multiple forwarding
- Mail Magic (Web Mail)
- Own CGI-BIN, MYSQL and PHP4 support
- Linux or NT server
- FrontPage 98 & 2000 extensions
- Remote control panel via web interface
- Full graphical site statistics
- 1 GB of transfers per month

SoHo $399/yr. or $35/month

FREE TOP LEVEL DOMAIN NAME!!

- 30MB web/ftp hosting space
- 10 POP3 Email boxes
- Unlimited Email addresses
- Virtual Email and multiple forwarding
- Mail Magic (Web Mail)
- 5 autoresponders
- SSL secure server facilities
- Access and File Maker Pro support
- Own CGI-BIN, MYSQL and PHP4 support
- Linux or NT server
- FrontPage 98 & 2000 extensions
- Remote control panel via web interface
- Full graphical site statistics
- 1 GB of transfers per month

Standard $489/yr. or $45/month

FREE TOP LEVEL DOMAIN NAME!!

- 50MB web/ftp hosting space
- 15 POP3 Email boxes
- Unlimited Email addresses
- Virtual Email and multiple forwarding
- Mail Magic (Web Mail)
- 10 autoresponders
- SSL secure server facilities
- Access and File Maker Pro support
- Own CGI-BIN, MYSQL and PHP4 support
- Linux or NT server
- FrontPage 98 & 2000 extensions
- Remote control panel via web interface
- Full graphical site statistics
- 2 GB of transfers per month

Advanced Hosting Packages

Heart

$599/yr. or $55/month

FREE TOP LEVEL DOMAIN NAME!!

- Full Web and Email forwarding on a second mirrored domain
- 75MB web/ftp hosting space
- 30 POP3 Email boxes
- Virtual Email and multiple forwarding
- Mail Magic (Web Mail)
- Unlimited Email autoresponders
- Linux or NT server
- FrontPage 98 & 2000 extensions
- Access and File Maker Pro support
- Own CGI-BIN, MYSQL and PHP4 support
- SSL secure server facilities
- Remote control panel via web interface
- Full graphical site statistics
- 2 GB of transfers per month

$25 from this package is contributed to charitable causes. Charities include: the Royal Flying Doctors, the Salvation Army and the Royal Life Saving Society Australia.

Enterprise

$799/yr. or $72/month

FREE TOP LEVEL DOMAIN NAME!!

- Full Web and Email forwarding on a second mirrored domain
- 100MB web/ftp hosting space
- 50 POP3 Email boxes
- Virtual Email and multiple forwarding
- Mail Magic (Web Mail)
- Unlimited Email autoresponders
- Linux or NT server
- FrontPage 98 & 2000 extensions
- Access and File Maker Pro Support
- Own CGI-BIN, MYSQL and PHP4 support
- SSL secure server facilities
- Remote control panel via web interface
- Full graphical site statistics
- 3 GB of transfers per month

Reseller's Packages

We offer 3 tiers of discounts for designers, please call for more details.

Shadow Hosting. We supply you with the administration software – you become your own hosting company using our servers, bandwidth and support.

Our easy to use, browser based software allows you to check availability and purchase domains, automatically create packages on our servers and administer your clients' accounts – all with no hassles and no minimum monthly package requirements. We can supply a standard system or customise to meet your needs. Give us a call and we can talk about what suits you best.

Using our Cobalt RaQ solution you get exclusive use of a brand new dedicated RaQ which enables you to host at least 250 sites from under $2 per site per month. You control your sites using plain English and your web browser. You don't need to know Linux, Apache Sendmail or any other technical requirement normally associated with Web Hosting.

We provide and configure the RaQ - We give you a generous bandwidth allowance - You get the benefit of controlling your sites and adding new domains to your portfolio without adding further cost.

RAQ3 32MB, 10.2GB
Prepaid for a year Equivalent to :
$4,788 - $399 per month

RAQ4 450mhz, 128MB, 15.2GB
Prepaid for a year Equivalent to :
$5,988 - $499 per month

RAQ4 450mhz, 512MB, 30GB
Prepaid for a year Equivalent to :
$10,200 - $850 per month

All our Email and Web Hosting packages include:
daily back-ups, Smart UPS and free technical support.

Freephone: 1800 999 618

www.ilisys.com.au

www.ilisys.com
www.magic-moments.com.au

2CDs

What's hot on *APC* April CDs

For a complete list of programs featured on the April CDs, see the CD insert.

PROTECT YOUR PRIVACY

To tie in with our spying feature, this month's cover CDs include a selection of programs to keep your PC safe from prying eyes. From cookie washers to email encryption software and Web anonymisers, we've got a variety of tools to keep your PC secure.
Includes: MailSecure, PGP Freeware, AnalogX CookieWall, Cache & Cookie Washer 1.7 for Opera, Cache & Cookie Washer 3.0, Stealth Anonymizer, Anonymity 4 Proxy 2.5.2, BlackICE Defender, Zone Labs ZoneAlarm, and OptOut.

TUNE IN: 90 free MP3s

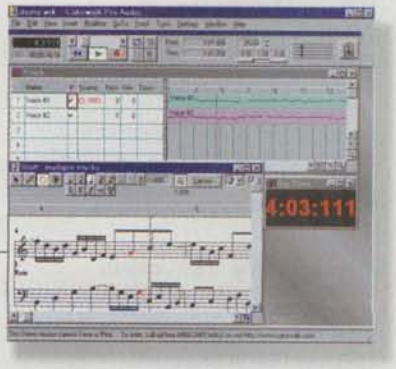
chaosmusic

downloadmusic

Featuring a huge array of tracks from signed and unsigned Australian artists, this month's cover CDs bring you 90 different songs covering almost every musical genre. Compiled with the help of ChaosMusic, Downloadmusic.com.au and MP3.com.au, this special feature on CD2 contains hours of music for your listening pleasure. And don't forget to check out Random Notes on CD1 for even more music.

MP3.com.au

MUSIC MANIA: Over 65 audio programs



All the latest programs for digital music can be found on CD 2, including MP3 rippers and encoders, audio editors and players, MIDI applications, plus music management and search tools. The ultimate collection of audio software!



GameZone

FIFA 99 was selected as one of *APC*'s best ever sports games. This month, you can try out the latest instalment from EA: FIFA 2001. If you are not a soccer fan, be sure to check out Insane and NBA Live 2001, featured on CD 2.

Plus all our regulars, such as the Patch Panel section, Internet Toolkit and a selection of shareware reviewed by our OS specialists.

Your guide to the cover CDs

The *APC* cover CDs complement the magazine and **apcmag.com**. Each month's disc collection features software related to articles in that issue, as well as special CD-only features and Web browsers.

Each piece of software includes instructions on whether you need to unzip the file before installing it, and most also include README files. A complete list of software on this month's discs appears on the CD insert.

The CDs were created in HTML. You do not need any special software to access them other than a standard browser. The CDs were tested using Netscape Navigator 3 and 4, and Microsoft Internet Explorer 3 and 4.

All software on the CDs is provided as is, without any warranty, expressed or implied. Complete terms and conditions are included on the CD; click on the Conditions of Use link for details.

How to run the CDs

Before using the CDs, please read the Conditions of Use online at **apcmag.com** under CDs. These CDs use an Autorun feature for Windows 95, 98 and NT systems. Just insert a cover CD and your browser will automatically load with the *APC* CD front page. Users of other platforms can launch their favourite browser and load the file DEFAULT.HTM in the root directory of the CD. For further information, see the instructions on the back of the CD insert.

You should carefully read the licensing agreements and honour any evaluation or shareware terms specified, read all instructions and README files, and virus check every program before use.

While *APC* has taken every care to ensure that the software provided is useful and that it works, we cannot accept responsibility or liability for any of the products included.

If you have any problems, refer to the Help section on the back of the CD insert.

HyperTransport ups ante in speed wars

AMD, the world's second-largest chip manufacturer, is hoping that industry support will help establish its HyperTransport architecture and allow it to compete more effectively in the multiprocessor market.

HyperTransport, which was originally announced under the codename Lightning Data Transport (LDT) in 1999, is a high-speed, point-to-point link designed to improve the transfer of data between separate circuits (such as individual processors) on a motherboard. The system claims data transfer rates of up to 6.4G per second, compared to the maximum speed of 266M per second achieved by older technologies such as PCI. It can support up to 32 devices per channel. This helps to eliminate bottlenecks created in data transfer between core system components.

In February, AMD announced that it had signed up more than 100 companies to support HyperTransport, including well-known companies such as Acer, Cisco, nVidia, Sun and Via. Relatively few products have hit the market so far, but AMD is predicting that there will be more releases from its partners by the end of the year. AMD isn't planning to release any HyperTransport-enabled products until later this year or possibly early 2002.

"With major industry players like Cisco and Sun endorsing the technology and planning to integrate it into commercial products, the future of HyperTransport looks bright," Linley Group analyst Linley Gwennap said at the time of the announcement. Gwennap also commented that the market for such architectures may fragment into different approaches for different applications, rather than a single standard becoming dominant.

One key advantage for HyperTransport in the battle to supplant PCI may be its price. AMD has denied that it will license the technology for nothing, but it is reportedly offering an extremely low price in a bid to establish HyperTransport. AMD is promoting the architecture for embedded systems and communications vendors, as well as for the traditional PC market.

HyperTransport is an important element in AMD's plans for its Sledgehammer multiprocessor unit. Gaining additional leverage in the multiprocessor market is a critical step in AMD's development. The company has competed effectively with market leader Intel over the past year in the single processor speed race, releasing its 1GHz chip commercially before Intel did. The success of HyperTransport will play a major role in determining whether AMD gains entry into the corporate marketplace in the same way. As PC sales are declining, this could prove crucial to AMD's fortunes.

AMD has had most of its success in the budget consumer market, and Intel has maintained a stranglehold on the corporate marketplace. Corporate systems are a more attractive market for chip manufacturers, as they offer more impressive profit margins than the competitive consumer market.



The most obvious direct competition to HyperTransport comes from RapidIO. The RapidIO standard is being led by a group of telco and networking companies including Alcatel, Cisco, EMC, Ericsson, Lucent, Mercury Computer Systems, Motorola and Nortel.

RapidIO claims a throughput of up to 10G per second, and speed is a critical factor for the communications-focused applications being promoted by the group. The standard has yet to gain significant support, but the RapidIO trade association has attracted about 35 members so far.

In January, RapidIO announced the development of Serial RapidIO, which will produce a version of the technology with a lower pin count rather than maximum throughput. That strategy appears to be aimed directly at HyperTransport, as its low pin count is promoted as a key attraction for chipset manufacturers.

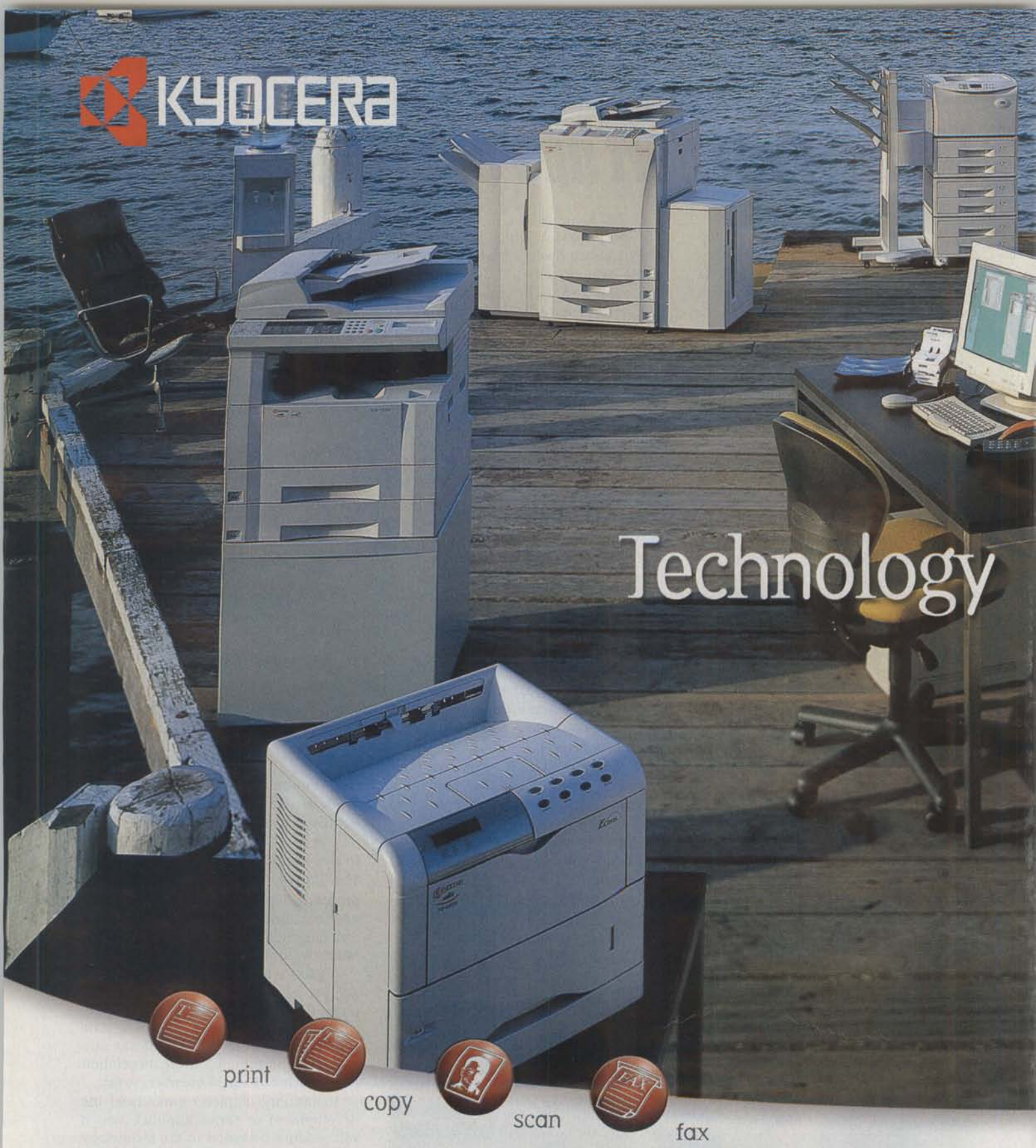
In related news, AMD has confirmed that CEO WJ Sanders will remain in his post until April 2002. He will then be succeeded by current COO Dr Hector J de Ruiz.

Angus Kidman

News contents

Top news this month

HyperTransport ups ante in speed wars	15
Can Napster survive?	18
Sausage: Off with a banger	18
Broking wars	18
Sold gets sold	18
Nicole Kidman reclaims domain names	18
Westfield tears down Net mall	20
Censorship issue flares again	20
Optus overthrows One.Tel	20
Digital copyright laws	20
Modem update	20
Brakes on for IT job growth	22
Datacasting hopefuls apply	22
Cheaper software?	22
Optus satellite for ABC	22
Government online	22



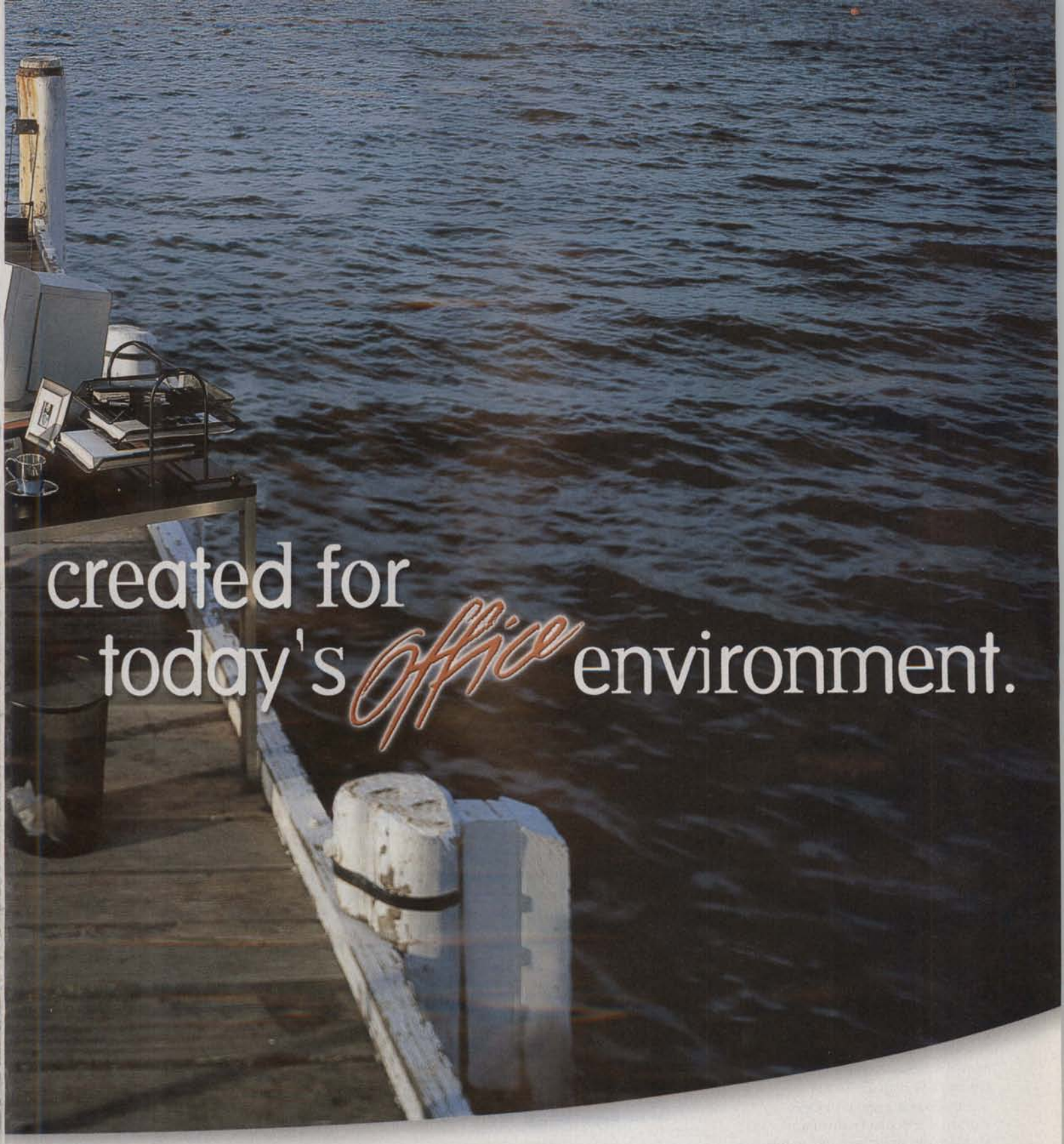
If you're fishing around for a range of office machinery that will save you time and money – you've found it with us.

The Kyocera Group's digital document solutions for today's office environment that are completely integrated. Our digital copiers and ECOSYS printers talk to each using the same software. We call this 'shared technology'.

Our document solution equipment all have enhanced network connectivity that reduces set up hassles. And feature the same interface, print controllers and networking capabilities - all talking the same language.

We are also committed to developing a diverse range of products that not only utilise leading edge technology, they are environmentally friendly.

For instance, our revolutionary ECOSYS technology used across our range of laser printers does away with disposable and ecologically unsound



cartridges. The components (drum, developer and toner) have been separated so that each is replaced only when necessary.

The Kyocera Group's network of digital copiers and ECOSYS printers have been created to make document output more economical, ecological and efficient – giving you more time to do the things you want to do.

Kyocera Mita is Kyocera's Document Solutions Company.
KYOCERA MITA AUSTRALIA contact 1300 364 429 or www.kyoceramita.com.au
KYOCERA CORPORATION www.kyocera.co.jp
KYOCERA MITA CORPORATION www.kyoceramita.co.jp

KYOCERA
mita

News roundup

Broking wars

Commonwealth Securities and Charles Schwab have started a price war in the online broking market. ComSec, Australia's largest online broker, is offering half-price trades until June for frequent traders. Schwab responded two days later by offering 30 days of free trading to all customers with $10,000 in cash or assets. Schwab is struggling to boost its small customer base in the crowded online-trading market. "You won't see us start a price war," Schwab chief executive officer Lynnda Sarinske said at the launch of the service late last year.

Sold gets sold

Yahoo Australia & NZ has bought the Fairfax Internet auction site Sold.com.au. Yahoo says that the Sold.com.au site will keep functioning, but will be eventually merged with Yahoo's own auction service. Sold.com.au charges listing and commission fees, but the Yahoo site does not. Yahoo has not yet announced a decision regarding pricing. The deal also allows Yahoo to use Fairfax's online arm f2 to sell its auction and store services to businesses, while real estate content will be provided to the Yahoo Australia & NZ site.

Nicole Kidman reclaims domain names

The seemingly endless coverage of the marital split between actors Nicole Kidman and Tom Cruise has overshadowed a notable victory by Kidman in a domain name battle. Kidman won back the rights to the domain names nicolekidman.com and nicolekidmannude.com after notorious cybersquatter John Zuccarini failed to defend his ownership at a World Intellectual Property Organisation hearing. The result was announced on the same day as her separation from Cruise. Canadian chanteuse Celine Dion also recently won back the rights to celinedion.com.

Can Napster survive?

It began with the promise of free music for Internet users everywhere. Now, almost three years after its launch, Napster has begun the laborious task of removing thousands of copyright-protected song titles from its servers.

Under legal pressure from recording companies, Napster is altering its MP3 sharing index so that it will not display certain copyright songs residing on hard drives in home and offices around the world. At the time of writing, only those files identified by the recording companies were being blocked — over 5,000 songs.



However, this may not be enough to save Napster from shut-down. As we went to press, a US judge was still deciding what action would be taken.

It is still unclear to what extent Napster will be asked to police its system for copyright music. The Recording Industry Association of America (RIAA) wants to submit the names of albums and songs to be blocked; Napster says it can only work with specific file names. Judges have indicated that unless the problem is solved, Napster could face damages claims from recording companies.

Napster has also proposed a real-time filter to find and remove copyright music files from its system. Under the proposal, Napster would be given three business days to remove titles from its index. Napster would also have bi-weekly meetings with recording companies and file a monthly report on its operations.

If Napster is to ward off the RIAA's legal attack for good, it may also have to convince millions of people to pay for the privilege of using its software to share music files. The question is, how will Napster do this?

Napster is receiving help in this area from German media company Bertelsmann, which invested in Napster on the proviso that a new user-pays system be introduced. Bertelsmann representatives say a 'subscription model' could be ready by June or July, but haven't said how much the service will cost.

Even if Napster can come up with a business model, it's not clear whether the RIAA will drop its legal attack. In February, Napster offered to pay $150 million each year to the major record labels and another $50 million to independent labels. The offer was rejected.

Sony is also promoting its own Napster alternative, a 'virtual jukebox' that allows operators to monitor what songs are being downloaded. The technology will be launched by Sony and Paris-based Vivendi Universal, and will use a 'secure network' instead of the Internet.

The RIAA has reportedly said it will eventually tackle Napster-alternative Gnutella, and is asking US ISPs to clamp down on other Napster clones.

William Maher

Sausage: Off with a banger

One of Australia's most infamous Internet companies is preparing for a name change. Sausage Software, which entered the spotlight after its stock exchange float made founder Steve Outtrim Australia's first dot com millionaire, is to drop the Sausage name. Company officials believe that the name — coined by Outtrim as a joking reference to the company's flagship product, the HotDog HTML editor — does not adequately reflect Sausage's current focus as a provider of consulting services. A new name had not been announced at press time, but will doubtless be eagerly examined by headline writers, who have made frequent gags at Sausage's expense in the past. For instance, when Outtrim stepped down from the company, *APC*'s Newswire service reported the story as: 'Outtrim bursts from Sausage's skin'.

Angus Kidman



Success is the dance of life. That's why to get to the top, you need a partner with the best moves in the business. Introducing the all-new Minolta DiALTA Color CF2001/CF1501 Digital Copiers/Printers/Scanners. The innovative CF2001 and CF1501 can replace your black-and-white business documents with convincing graphs, photos and reports in brilliant color. They offer the same exceptional quality, speed and ease-of-use as conventional monochrome copiers, but with the impressive and persuasive results that only color can provide. Plus, you get excellent cost efficiency that makes color ideal for office use. Isn't it time you let color put your business in motion? The Minolta DiALTA Color Series. Business imaging that's essential to business success.

DiALTA Color™
CF2001/CF1501

Full-color Copier / Printer / Scanner for the office

- High-speed, full-color output at 20 copies/min(CF2001) and 15 copies/min(CF1501).
- High-quality 600x1,800dpi resolution equivalent output.
- Connects to office LANs for use as high-speed network printer/scanner (optional functions).
- Office-friendly, simple operation, and space saving design.



DiALTA Color series

MINOLTA

The essentials of imaging

www.minolta.com

Minolta Co., Ltd.; Osaka, Japan http://www.imageinfo.minolta.com
For more information or to view Minolta copiers/printers, contact **Minolta Business Equipment Australia** Phone: 1800 644 833 http://www.minolta.com.au
Minolta DiALTA Color 01

News roundup

Optus overthrows One.Tel

Optus has overtaken One.Tel as the third-largest Internet service provider in Australia. Optus claims that it now has 300,000 dialup subscribers after attracting 75,000 new customers to the OptusNet service since September last year. Optus also claims that it is the fastest growing subscription-based ISP in Australia. In related news, the sale of Optus has moved a step closer after rival telcos Vodafone and Hutchinson (which owns the Orange One mobile network) jointly submitted a proposal to the Australian Competition and Consumer Commission to gain control of Optus.

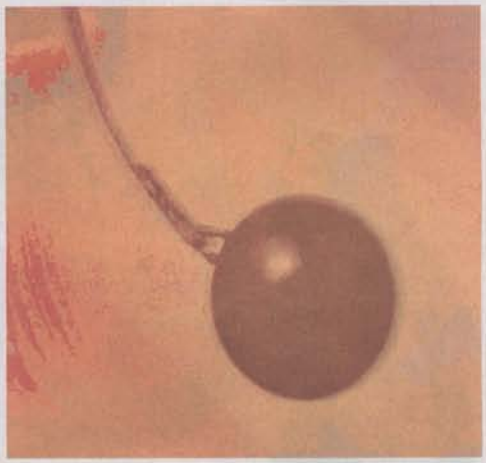
Digital copyright laws

Sony thinks that new digital copyright laws might be the answer to stopping PlayStation piracy. Copied game discs aren't supposed to work in new PlayStations, but many owners install chips that circumvent copy protection and allow copied discs to play. New digital copyright laws ban the use of technology such as decoding devices or software for cracking passwords to circumvent digital copyright protection. Sony warns that people who chip PlayStations, especially those who import and sell the chips, are liable to civil action and criminal penalties including fines up to $60,500.

Modem update

Modem makers haven't given up on the analog modem just yet. Testing has started overseas on new modems with faster upload speeds and ISP connection times. The models use the V.92 standard, which can upload data from a home computer to the Internet at a potential 48Kbps, instead of the average 33.6Kbps for V.90 modems. On some V.92 modems, transfer speeds will be adjustable in favour of uploads or downloads. The modems will also allow people to answer telephone calls while online without losing their connection.

Westfield tears down Net mall



Shopping mall developer Westfield has abandoned plans to launch an online shopping mall after spending a year and $5 million building the site.

Westfield deputy chairperson David Lowy said that the Internet Shopping-town venture is "operationally ready" to launch if the etailing sector shows improvement. "We have decided to post-pone the launch until we are satisfied that Internet retailing has a reasonable chance of being profitable for retailers," he said. Westfield is the largest retail developer in Australia, and has about 6,000 tenants.

Struggling etailer 131-Shop has also collapsed after a series of business fail-ures. Investment company Tomorrow has agreed to purchase 45% of the company in a share swap deal worth about $4 million.

Chief executive officer of Tomorrow, Wayne Bos, indicated that he will wind down the troubled etailing business when 131-Shop's existing contracts expire in the middle of the year. Tomorrow plans to set up an unrelated business within the shell of 131-Shop, which is listed on the Australian Stock Exchange (ASX).

When the company floated on the ASX in July 1999, 131-Shop shares debuted at 70 cents, raising $7 million. However, online sales failed to match prospectus forecasts and in June last year 131-Shop was forced to offload the day-to-day oper-ation of the etailing business to stay afloat. An administrator was also appointed to its direct sales arm.

For the three months up to December 31, 131-Shop attracted revenue of just $30,000, and its share price has slumped below 4 cents in recent months. The Tomor-row deal is subject to shareholder approval.

Fiona Angus

Censorship issue flares again

The long-running Internet censorship debate has flared up yet again, this time over plans to regulate Web pages that originate in South Australia.

Legislation proposed by the South Aus-tralian Attorney-General would impose fines of up to $10,000 on people in that state who upload to the Internet material deemed offensive. The laws are not intended to catch ISPs or other companies hosting the Web pages.

Critics say that the bill does not clearly explain under which jurisdiction the laws would apply. For example, it is unclear whether an offence depends on the location of the Internet server or on the person uploading the offensive material.

The bill's opponents such as Electronic Frontiers Australia (EFA) and the South Australian Internet Association (SAIA), argue that without uniform laws across all Australian states and territories the laws would be difficult to enforce. Other states have laws applying to Internet content, but these were introduced well before the Federal Government introduced a national complaints system for offensive Internet content last year.

"It risks rendering some South Aus-tralians accidental criminals. SA cannot cocoon itself from the realities of the world, which is what this legislation tries to do," SAIA president Simon Hackett said. The South Australian proposal also removes the need to have material classified before prosecution can begin. This is designed to speed up prosecutions for the illegal selling of unclassified films and computer games, but it will also apply to Internet content.

The legislation's opponents argue that the bill isn't consistent with rules for offline material. Similar arguments were raised when Commonwealth laws regulating Internet material were introduced in 1999.

Under Commonwealth law, Australians can complain about offensive Internet sites to the Australian Broadcasting Authority (ABA). If the site is refused classification, the ABA can order it removed or access blocked.

William Maher



HIGHLY SOUGHT AFTER

On the back of a year that saw sales double, Hitachi CRT monitor sales have increased another 300%*. Why the massive growth? Is it the comprehensive range? Is it the leading technology or superior quality? Is it the extensive testing which breeds reliability? Maybe it's the value for money – it must be the price. Curious? See for yourself why they really are the prize catch, call 1800 789 799 or visit www.hitachi.com.au

HITACHI
Inspire the Next

HITACHI AUSTRALIA LIMITED ACN 075 381 332 – HITACHI is a registered trademark of Hitachi Ltd. *Data available from Hitachi Australia upon request. Aorta9971

News roundup

Cheaper software?

The Federal Government claims that changes to the Copyright Act could reduce the price of software by 20%. The changes remove restrictions on the parallel importation of software products, allowing Australian businesses to import copies of overseas software without obtaining the permission of the Australian copyright owner. This follows a government investigation which found that Australians have to wait longer and pay about 27% more for packaged business software. The software industry fought the changes, arguing that the laws will lead to more piracy while consumers who buy overseas software will not be entitled to local support services. Retailers remain unsure of when price reductions will filter through to consumers.

Optus satellite for ABC

Optus has scored a $175 million deal to broadcast the ABC's digital TV transmissions via satellite for the next 10 years. The satellite broadcast will deliver the same picture quality to people in rural and urban areas. The Optus satellite broadcasts will begin in metropolitan areas on July 1 and will be progressively introduced across regional Australia by 2008. The transmission will reach a potential 240 sites around Australia, where downlinks will be managed by broadcast services provider ntl, which currently operates the ABC's terrestrial digital TV transmission.

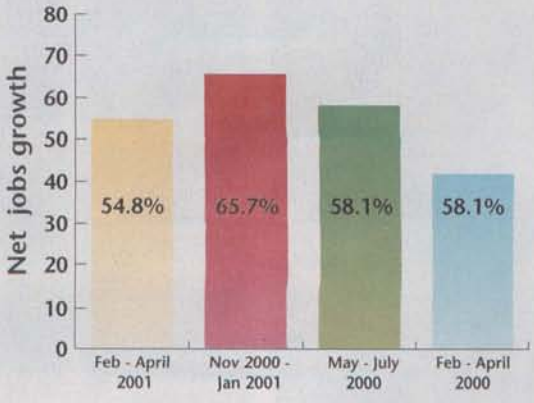
Government online

Tenders have been called in the $10 million Tasmanian trial to allow citizens to apply and pay for key government services over the Internet. Services to go online relate to recreational fishing, exports, starting and leaving school, housing and development applications, and Centrelink registrations. The aim is to establish a single Internet site from which citizens can gain access to services from state, federal and local government. The government said that solutions developed in Tasmania will be applied across the rest of Australia.

Brakes on for IT jobs growth

Growth in the IT job market is set to slow during the current quarter, according to the Morgan and Banks Job Index survey.

The quarterly survey found that 59.1% of employers are planning to hire IT staff during the three months to April 30. This is less than in the previous quarter, where a record 68.2% of firms were looking for IT professionals.The number of firms intending to lay off IT staff has increased to 4.3% in the April quarter, compared to the previous quarter's 2.5%.



However, job prospects for IT professionals are still almost double the national average, with only 29.8% of all employers intending to hire staff in the April quarter.

MBT director Ian James said that, despite the plateau, optimism remains extremely high in the IT sector. "The market was showing signs of overheating late last year and is now at a more realistic level," he said.

The national unemployment rate reached a nine-month high in January, according to figures released by the Australian Bureau of Statistics (ABS). The ABS results showed that 6.7% of workers were searching for a new job, while there was a dramatic drop in full-time jobs.

The dismal figures come as fears of a worldwide recession grip the market. The slowdown in the IT jobs market comes a year after the downturn in technology stocks, which saw many technology startups collapse.

However, James said that the demise of many dot coms had not translated into a downturn in IT jobs. "Don't believe the doom and gloom," he said. "Demand for IT is still outstripping supply." The survey found the highest demand within the IT sector was for technical support and sales staff.

He predicted that the trend will continue into the middle of the year.

Fiona Angus

Datacasting hopefuls apply

Federal government restrictions on datacasting have discouraged key players from participating in the upcoming datacasting spectrum auction.

Australia's largest media company, News Ltd, did not submit an application after a bitter row with the Federal Government over laws that limit what datacasters broadcast. To prevent new players from competing with existing television networks, the government has banned the transmission of services that resemble broadcast media. Content will be limited mainly to text and data services.

The only large media company to apply, John Fairfax, withdrew its application five days after the closing date. The poor response from Australia's media could mean that the government raises much less cash than anticipated. Opentv Australia and the Online Media Group also withdrew after paying the $10,000 application fee.

Telstra is the only major company left to bid. The other hopefuls are network construction company ntl Australia, and Barwix, a company linked to regional broadcaster Prime Television. Perth company Australian Datacasting Corporation will also bid, having been formed specifically for the auction. The Australian Communications Authority (ACA) will auction 16 datacasting transmitter licences, two in each of Australia's capital cities.

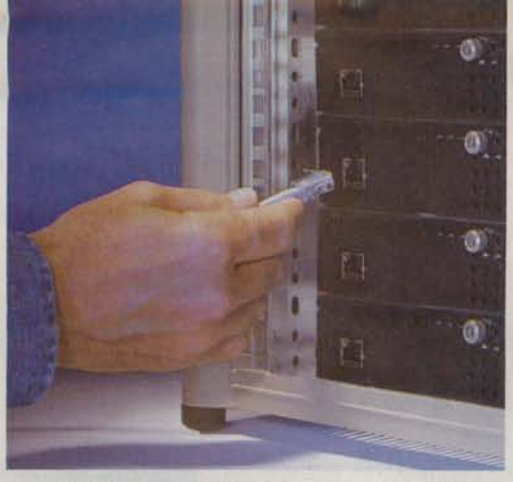
The successful bidders will be allocated a 10-year licence to operate transmitters for datacasting within an assigned 7MHz channel in each city. No more than one licence per city can be bought by a bidder. Existing television broadcasters are barred from participating in the auction.

ACA acting chairperson Bob Horton said the introduction of datacasting will develop "innovative services" for consumers.

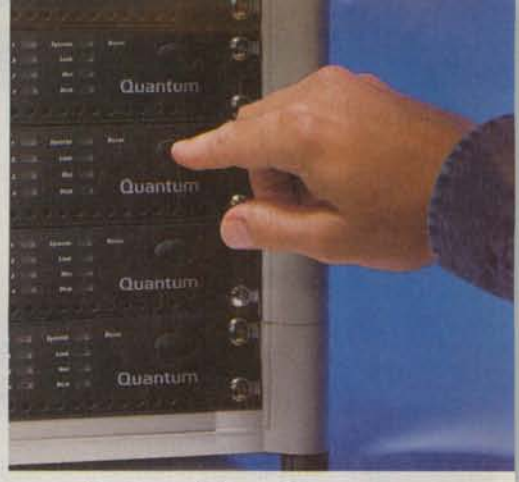
Fiona Angus



1. Plug into AC power



2. Connect to Ethernet hub



3. Turn Snap Server on

INSTALL UP TO 240GB ON YOUR NETWORK IN MINUTES

NEW Version v3.0 Delivers Even Greater Control, Security and Functionality

Ease of Use
- Auto-sensing 10Base-T/100Base-TX
- Automatic recognition of network types/clients
- Supports DHCP, BOOTP and RARP
- Configuration via Web browser

Features
- Embedded OS (unlimited user license)
- Pentium-class processor
- Ultra ATA hard drives
- RAID 5, 1 or 0
- Easily supports 100 or more clients
- v3.0 • Disk space quota set by administrator
- v3.0 • Full functioning FTP server
- v3.0 • SNMP support

Compatibility
- Simultaneous support for Windows 2000, NT, NetWare, UNIX, Linux and Macintosh networks and clients across TCP/IP, IPX, NetBEUI and AppleTalk networks
- v3.0 • Complete NFS 3.0 protocol support, symbolic linking of files and directories, Network Lock manager and rpcinfo command support

Network Backup
- Compatible with Windows and Netware backup software, including Veritas Backup Exec, Computer Associates ARCserveIT and Microsoft backup software for Windows 95/98/NT/20000
- v3.0 • SMART predictive disk failure analysis

Network Security
- v3.0 • Set access permissions at file and directory level
- Integrates with Microsoft Domain Controllers or local user list

Guarantee
- 3-year parts and labour

Price (includes GST)

15GB – $1,263	120GB – $7,158
30GB – $1,908	240GB – $10,739
60GB – $4,056	

Snap Servers are engineered for one purpose: file sharing. That's why they can be up and running on a LAN in just minutes! Snap Servers offer you the perfect combination of quick and easy installation when compared to an NT server. Snap Servers are pre-configured to work in all major network environments, which means you just plug it in and turn it on, with no network downtime. To virtually install a Snap Server yourself, visit our web site:
www.snapappliances.com/apac

Snap! server™

The Industry Standard.

www.snapappliances.com/apac

Distributed Australia-Wide By:

Lan 1
1800 46 SNAP (7627)
www.lan1.com.au/snapaccess

ACA Pacific
(03) 9674 8188
www.acapacific.com.au



©2000 Quantum Corporation. All rights reserved. Quantum and the Quantum logo are trademarks of Quantum Corporation, registered in the U.S.A. and other countries. Snap Server is a trademark of Quantum Corporation. All other products names are trademarks of their respective companies.

CREAM 3636

Australia has emerged as the world's major source of a rare metal vital for the next generation of handhelds.

The new gold rush

The mining industry is Australia's largest export earner. Despite our high use of new technology and the government's promise to spend $3 billion on new technology research, the world has long viewed Australia's economy as a glorified quarry. Now the world is depending on Australia's resource sector to underpin the wireless revolution.

Australia is the world's largest producer of tantalite, a comparatively rare metal with unique properties that can be used to build smaller, more functional handheld devices.

One Australian mining company has cornered most of the world tantalite market. Sons of Gwalia, which was set up as a gold mining company in the early '80s, now controls over half the world's known resources of tantalite from its two open-cut mines in Western Australia. It supplies over 25% of world demand. Gwalia's gold division earnings are expected to be flat for the foreseeable future, but earnings from tantalite are expected to grow.

According to Gwalia investor relations manager Carmen Kiggins, the company produces about 726 tonnes of tantalite each year, while its nearest rival manages just 91 tonnes. "We have the largest known resources of tantalite in the world," she said.

Tantalite is used to make tantalum metal, which is capable of storing twice as much electrical charge as any other mined substance. Tantalum is used in capacitors, which control the flow of electricity through circuit boards. Of the tantalum produced, 54% is used by electronics companies such as Intel, IBM, Sony, Nokia and Palm to build capacitors. Another 8% is used in PC memory chips and processors in the form of an oxide material. "The increase in handhelds has had a significant effect on tantalum demand," Kiggins said.

The demand for tantalum is outstripping supply, according to Merrill Lynch. "Tantalum capacitors are used in anything where miniaturisation is important, like Palms, mobile phones and laptops," Merrill Lynch gold and resources analyst Matthew Starick said. The demand is fuelled primarily by the growth in wireless handset sales, which are expected to almost double over the next two years.

To meet demand for tantalum, the company plans to spend $100 million to double the size of its tantalite production. In February, Gwalia predicted that its earnings will rise significantly as a result of increased production and higher prices for tantalite.



For the past 11 years, it has sold tantalite to just two customers: the mineral production arm of German chemical giant Bayer and US corporation Cabot, which owns 6.4% of Gwalia.

Kiggins said Gwalia has negotiated confidential sales contracts with Bayer and Cabot and does not disclose the price of its tantalite. However, Starick estimates Gwalia sells tantalite into the fixed-price contracts for between $US22 and $US27 per kilogram. Most of the world's tantalum is sold under special contracts, but recent spot prices have soared to over $US136, Starick said. Last December, a small amount of tantalum was sold on the open market from a stockpile held by the US Defense Logistics Agency for $US158 per kilogram.

Shining prospects

According to Starick, Gwalia has a "unique oligopolistic position in the market" that has created a stable market for tantalum. This stability is important for electronics makers to plan and develop new products. The long-term contracts were designed so Gwalia could secure funding to build a processing plant. As a result, Gwalia and its customers have been able to process the tantalum more effectively and make fuller use of it.

Researchers are developing capacitors that require less tantalum. This could reduce demand for the unrefined product. However, the latest handheld devices require more tantalum capacitors to provide features such as wireless Internet and infra-red networking. New mobile phones use up to 25 capacitors, whereas older models use about 10. A Nintendo game requires 20 to 30 capacitors.

As a result, tantalum consumption has increased by about 25% each year for the last three years and the market for tantalum is expected to remain strong.

Another threat to tantalum demand is the possibility of a better technology becoming available. "That's a long way off and would likely take over five years to become commercial," Starick said. "People are obviously working on this, but right now there is no real cost competitive or functional substitute for tantalum."

The positive outlook for tantalum has doubled Gwalia's share price over the last year to $8.20 in late February. Not surprisingly, Gwalia isn't the only mining company with an eye on tantalum. "Higher spot prices have attracted junior explorers to the market," Starick said.

In February, Australasian Gold Mines set up a joint venture company with the world's largest manufacturer of tantalum capacitors, KEMET. The new company, Tantalum Australia, plans to set up a local mining operation and intends to pursue global ventures. According to Starick, this is only a small operation. "Australasian Gold Mines' current tantalum resources are less than one-hundredth that of Gwalia's. They're really just bringing into production a small trial plant while exploring for tantalite."

Haddington International Resources is also developing a small tantalite mine and processing plant in Western Australia under a licence from Gwalia.

However, Gwalia is set to remain on top. Its two mines are expected to last another 25 years at current production levels.

Fiona Angus

Unlimited offer.

$24.95* cost per month

- **Unlimited Internet downloads**
- **As many hours as you want^**

The iPrimus unlimited offer also includes:

- Fast, reliable connection with Australia's top rated ISP
- 24/7 Technical Support
- Free Internet WebFilter
- 4 email addresses
- Free access to the iPrimus games network
- 16c# local calls when you join Primus for your telephone service



The speed you need
1300 85 85 85



iPRIMUS
www.iprimus.com.au

*Excludes telephone charges. Offer valid for a quarterly subscription on the "Infinity" Plan. A fee of $74.85 is payable quarterly in advance. Only open to new account holders in selected capital cities. Plans are non-refundable. Must be over 18 years of age to hold an iPrimus account. See our Web site for full terms and conditions. Prices include GST. ^Unlimited number of sessions. 4 hour session time limit may apply. #Offer available to registered residential Primus Total Service Customers. A monthly $17.50 line rental and $3.69 plan fee applies. Excludes 13, 1300 and other special services.

Can the Internet be used to host large-scale elections?

election.com: cast your vote

The NRMA has decided to use the Internet to try to reduce costs involved in one of Australia's largest private sector elections, the company's annual election of directors.

Later this year, 2 million NRMA members will be issued with a PIN allowing them to log on to a Web site to vote. Members will also be able to post their votes in the mail.

The NRMA wishes to encourage more members to take part in its elections. Voter turnout in private sector elections is notoriously low, and only 23% of members voted in the 1999 NRMA election. The NRMA is hoping Internet voting will increase participation.

Internet elections are also much cheaper to hold than postal ballots. NRMA deputy president Mary Easson believes Internet voting could one day result in "substantial" savings.

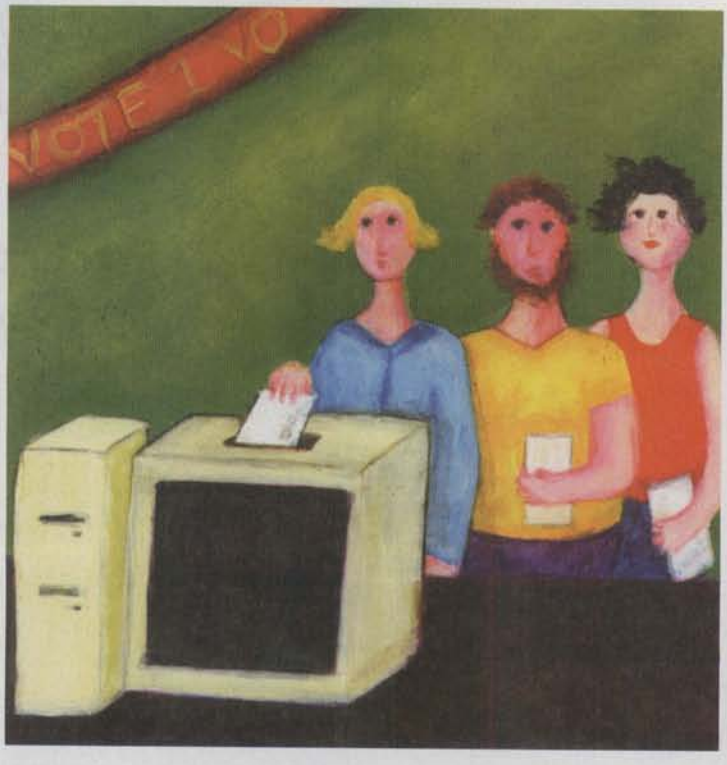
"With the paper ballot, every time you add more information it makes it more expensive," she said. "The great advantage of this system is that you can put everybody's data online and translate it into several languages."

The company chosen to handle the Internet and postal votes, election.com, has a different take on the benefits of online elections. Last year, the US-based company was hired to set up an Internet voting system for the Arizona Democratic Party's presidential preference primaries. The event is reportedly the first legally binding political election in the US to accept Internet votes.

Following the controversy over last year's US Presidential election, the Arizona case is being lauded as an example of the benefits of Internet voting. Proponents of the system say there is less chance for confusion and error if votes are submitted through the Internet and processed electronically. Almost half of Arizona's voters submitted votes over the Internet and the results were available within an hour of the polls closing.

"That's the nice thing about Internet elections. There's no bias," election.com's Australian managing director Frank Nesci said.

election.com has also held online elections for other groups. Late last year, the Australian Information Industry Association (AIIA) held its first election for the board of directors exclusively online. The AIIA has at least 200 members, and 110 of them participated in the election.



Other important industry groups are also using the Internet for elections. Late last year ICANN, the organisation responsible for coordinating Internet addresses, invited the public to vote online for some of its board members. More than 76,000 people reportedly registered to vote.

election.com has now established an office in Australia, from which it hopes to encourage associations, unions, clubs and political organisations to hold elections online. The organisation also handles paper ballots, so voting isn't restricted to the Web savvy. After all, some Australians will never own a computer or have Internet access.

Other problems with holding elections online include finicky technical issues, which plague most operations that involve computers. In the Arizona case, there were reportedly problems with servers, Macintosh browsers and the screen-reading software used by blind people.

Despite this, election.com claims the voting system is relatively simple. In most cases, voters are issued with a PIN that gives them access to the voting Web site. In the Arizona election, voters entered their name, date of birth and social security number. They were then invited to click on a candidate's name to place a vote.

In the NRMA election, Internet voters will log on using a PIN and will then be asked a question to verify their identity (for example, their birthday and postcode). Once election.com servers register a vote, the relevant PIN is automatically disabled so that the same person can't vote again.

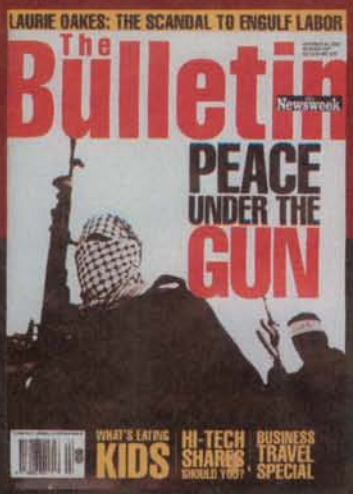
Whether the system could be used for large-scale political elections remains to be seen. The largest online election held by election.com wasn't real; it was a mock Presidential election held for school children across the US. The event, called Youth-e-Vote, saw more than 1.2 million votes cast on the Internet.

Technology can also be used in other ways for elections. A software package called Election Systems Manager, which automates the tasks required to run an election office, is available from election.com. It allows people to fill out voter registration forms on the Internet, download an election calendar, and view sample ballots and election results.

The software can also be used on touchscreen computers at polling stations. The system automatically delivers the correct ballot to each voter, and allows voters to choose from more than one polling station.

William Maher

Illustration by Anna Ephraim









SPECIAL APC READER OFFER

$99 50 ISSUES (12 MONTHS SUBSCRIPTION)

SUBSCRIBE NOW and you will get all the current affairs, politics, sports, economics, business, and arts news you need for **less than $2 a week!**

Don't miss this strictly limited offer: simply subscribe or renew your subscription to *The Bulletin* for only $99 for 12 months, and **save $148.50** off the newsstand price or $179 for 24 months and **save $316** off the newsstand price! That's less than $2 an issue.

SIMPLY CALL 136 116

now (8am to 8pm EST Monday to Friday and 8am to 6pm EST Saturday).

The Bulletin Newsweek

It's all you need to read.



mega mobile giveaway



Connect to Australia's coolest mobile network to win the grooviest prizes!
One.Tel Next Generation™ Mobile Network

Connect to any One.Tel Next Generation™ Mobile Plan for your chance to win!

$0Δ **$18 Plan**



NOKIA 3310
NOKIA
Connecting People

$0 Monthly Access Fee
$0 Set-Up Fee
$18 Min. Monthly Call Spend
24 Month Minimum Term

Nokia 3310 for $0
- Voice dialling
- Vibra feature
- Advanced messaging

$0Δ **$48 Plan**



NOKIA 8250
NOKIA
Connecting People

$0 Monthly Access Fee
$0 Set-Up Fee
$48 Min. Monthly Call Spend
24 Month Minimum Term

Nokia 8250 for $0
- Dual band
- Calendar
- Infrared Capabilities

PLUS FREE TIME 24X7*

500 mins FREE* calls each month between anyone connected to One.Tel Next Generation™ Network
24 hours a day, 7 days a week
(For the first 12 months of connection)

- **FREE† Voicemail** with **Reply Now™ for 1 month**
- **FREE† Cool Services™ for 1 month**
- **FREE† SMS* for 1 month**

Competition closes 11/5/01. Competition drawn 18/5/01. Publication of winners in The Australian 24/5/01.
NSW Permit No. TC01/1725 VIC Permit No. 01/597 S.A T01/650

ΔMinimum plan cost (including handset but excluding call charges) on the following plans: Next Generation 18 – $432; Next Generation 48 – $1152. Minimum monthly call spend excludes international, international roaming and premium rate services. For Next Generation 18 Plan, service may be disconnected if you do not make a call in each of the first 3 months. $250 disconnection fee and balance of minimum plan cost payable on disconnection for non-tolling or early termination. For Next Generation 48 Plan, $165 disconnection fee and balance of minimum plan cost payable on early termination. Monthly $3 billing administration fee waived if direct debit is taken. $6.50 late payment fee applies. Offer only available to customers in One.Tel Next Generation coverage areas. Full terms and conditions apply. Prices include GST. While stocks last. ABN 65 068 193 153.



This is mega cool! You could be cruising around in a brand new VW Beetle, belting around in the surf on a Yamaha WaveRunner, or kicking back and enjoying one of hundreds of other groovy prizes!

And all you have to do is **connect to Australia's coolest new mobile network**, One.Tel Next Generation™ Mobile Network!

Once you connect, you'll automatically **be in the running to win!** To check the full conditions of entry, visit our website **www.nextgeneration.onetel.com.au**

With a range of mega mobile deals to choose from, everyone's a winner with One.Tel!

Call 133 111 or visit your One.Tel Shop or Dealer

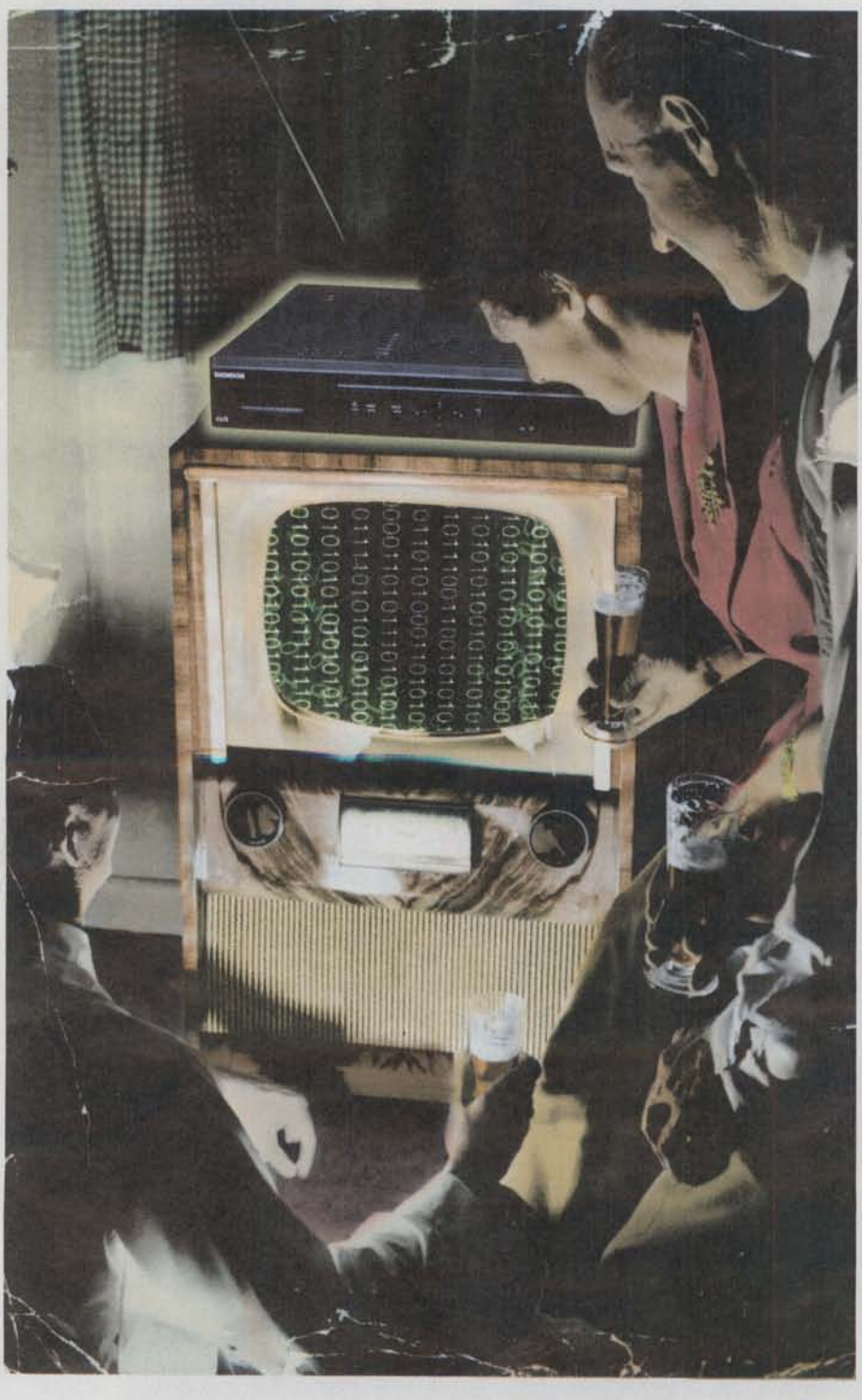
www.nextgeneration.onetel.com.au

One.Tel
100% Telephone Co.

*For first 20 mins of call only. One.Tel's fair use policy applies 5¢ per 30 secs call rate applies after 20 mins and after 500 FreeTime mins used in any mth. Unused FreeTime mins expire at end of each month. Check rate card for applicable call rate after first 12 months of connection. Excludes corporate connections, international roaming calls and calls from Lime City Pre-Paid mobiles. Additional 25¢ per 30 secs applies if your phone does not operate on 1800MHz or you manually select another carrier on your phone. Offer ends 30/6/01. Limit 2 per customer ‡ Additional call charges apply for Ring the Caller function and calls connected through Concierge. Normal charges apply after the first month. Free SMS between Next Generation customers only. Subject to One.Tel's fair use policy. • SMS available to Next Generation, Telstra GSM and Optus networks. BG&A G602/R

The revolution will not

Digital TV was meant to bring about a TV revolution. ***Alex Kidman*** *takes a look at the first digital set-top box on the Australian market, and ponders the future of TV.*



It was all meant to be very simple. Australia would adopt a digital TV standard, the commercial channels would get a headstart with guaranteed broadcasting rights from January1, 2001, and everyone would live happily ever after in a high-definition world. Of course, life isn't that simple.

For most people, the cost of high-definition digital TV makes it out of the question. Even if you can afford one, there are none on the market. The vast majority of those who will receive digital TV are expected to do so through a set-top box. Initially, overseas companies were unwilling to produce boxes for the Australian market, believing that the market was too small. Only when the commercial stations agreed to underwrite the exercise in September last year was there any real possibility of boxes becoming available.

It was not until December that the networks announced that French firm Thomson Electronics had been selected to bring in the first batch of boxes. Pricing estimates vary, but it's generally agreed that the underwriting cost has been between $5 million and $6 million.

High definition television (HDTV) is something of a white elephant overseas, as very few consumers are willing to pay high prices for new sets. Most estimates put prices at over $10,000. Set-top boxes provide an easier way to receive the digital signal, but until quite recently they've also been impossible to find. At the time of writing, the only national retailer selling the Thomson boxes was Dick Smith Electronics, which was retailing them for $698. Early reports indicated that the underwritten wholesale cost of the boxes was about $500 each. They were expected to retail for nearly $1,000. Clearly this is too expensive for most consumers, and it's good to see the price has been set more realistically. *APC* took a Thomson box for a spin to check out the box's technology and the digital TV services currently available.

The box is unremarkable; it looks very like a pay TV set-top box. It's connected

be televised

through an RGB or coaxial cable, but there is also the option for SCART connection if your TV supports it. The RGB connection uses a supplied SCART adaptor. SCART is common in Europe, but rare here, so you need the RGB converter to receive the best picture quality.

Setting up the unit involves clearing its preset channels then scanning for digital channels. This is a slow process, but to the manufacturer's credit, the instructions tell you to go and make a cup of coffee while you're waiting. *APC* tested the set-top box in two locations: in our offices in the Sydney CBD where signal strength is quite strong but subject to interference from electrical equipment and other office buildings; and in a home setting in far north Sydney, where the reverse is true.

In the office setting, the only channels the set-top box found were the four broadcast by SBS. The images were much better than could be achieved without the set-top box, but it was clear that the box wasn't getting enough signal as digital artefacts appeared frequently on the screen. It was rather like watching a poorly encoded MPEG on a computer with low memory.

Early reports indicated that interference between regular analog and digital transmissions might have occurred in early January, but all the networks insist that these problems have since been cleared up.

APC's experience with the home setup was far more satisfactory, as a grand total of 17 different 'stations' were found (see below).

Broadcaster	Channels
ABC	3
SBS	4
Nine	4
Seven	1
Ten	5

This might sound like a lot of channels, but it's worth remembering that with some exceptions (see 'It just *is* cricket'), digital broadcasting only reproduces existing analog signals. This means that there's a lot of dead air out there.

The Thomson set-top box has one annoying setup quirk. It found all 17 channels, but spread most of them between each broadcaster. For example, when browsing upwards you might hit two ABC channels, then a Nine channel, then a Seven, then another ABC, and so on. As broadcasters aren't transmitting anything on most of these channels, you are forced to flick through a lot of dead screens. The settings are just frequency gaps, so it should be possible to reorder them, but the box doesn't support that function.

Very few of the channels that were found use SDTV capabilities. Only the SBS and ABC signals stood out in this respect. ABC runs a constant program guide with the current and next program listed onscreen. SBS splits its four channels into two television and two radio channels. Radio reception was quite good, but you have to put up with a static onscreen image while you're listening.

Image and sound quality were excellent and unaffected by poor weather conditions such as rain and thunder. In comparison, signal quality on a regular analog connection was fuzzy and ghosted, especially on SBS. *APC* also compared the signal with a cable rebroadcast of existing Sydney channels. Here the difference was negligible; both sources gave clean, clear images. The commercial terrestrial channels have never been happy with cable rebroadcasting, but as long as it goes on, the need for digital broadcasting is questionable.

APC encountered several minor problems with the set-top box. As it changes channels, it brings up a channel bar that takes up one-third of the screen. This can be cancelled with a separate button push, but it becomes tiresome when it happens repeatedly. Also, there was a significant pause between channel changes, so quick channel surfing was out. It wasn't clear whether this was a fault of the hardware or of the digital transmission.

Promotional material from most commercial broadcasters plays up the availability of closed captioning from a teletext-enabled TV or through the set-top box. If this is important to you, don't choose the Thomson box, as it doesn't support it.

This month in First Take:

NOTEBOOK
Titanium PowerBook G4 36

GRAPHICS CARD
Appian Traveler 38

MP3 PLAYER
Rome MP3 II UP-322 38

NOTEBOOK
Fujitsu LifeBook B-2178 40

MEMORY STICK
IBM USB Memory Key 42

PRINTER
Epson Photo 890 42

WEB-ENABLED BUSINESS CARDS
Platypus Web Ecard 44

PROJECTOR
Acer PalmPro 7765PE 46

JOYSTICK
Microsoft SideWinder Force Feedback 2 46

All this might make the box seem like an exceptionally poor piece of hardware, but it isn't. It's more a case of there not being enough services available yet to justify spending almost $700. As there are no other boxes to compare it to, it's impossible to judge whether it's reasonably priced or has an acceptable range of features.

It just *is* cricket

Digital TV's smaller bandwidth requirements mean that several channels can be accommodated within a smaller span. Because of this, multiple camera broadcasts can be offered. However, live broadcasts are still in their infancy, as was clear from the Nine Network's broadcast of the cricket on February 7, 9 and 11. *APC* used the broadcast to test the set-top box further, and to look generally at the features digital TV provides.

The program was broadcast across four different channels, but the set-top box grouped only three of those channels

GATEWAY™ CAN TAI SOLUTION TO SUIT

CALL OR VISIT YOUR LOCAL GATEWAY™



Gateway™ Essential 866.
Affordable Powerful PC.

$2,499*
Plus delivery**

- Intel® Pentium® III Processor 866MHz
- 64MB SDRAM
- EV500 15" Monitor (13.9" Viewable)
- 20GB Hard Drive
- 1.44MB 3.5" Floppy Disk Drive
- 48 x Max CD ROM Drive
- Microsoft® Windows Me°
- Microsoft® Works Suite 2000°
- Gateway™ 1 Year Desktop Warranty

INCLUDES:
- Integrated Video & Stereo Audio
- Boston Acoustics BA265 Speakers
- Integrated 56K Data/Fax/Voice Modem



Gateway™ Performance 1300.
Pentium 4 Power.

$3,799*
Plus delivery**

- Intel® Pentium® 4 Processor 1300MHz
- 128MB PC-800 RDRAM
- EV700 17" Monitor (15.9" Viewable)
- 20GB Ultra ATA Hard Drive
- 48 x Max CD ROM Drive
- Microsoft® Windows Me°
- Microsoft® Works Suite 2000°
- Gateway™ 1 Year Desktop Warranty

INCLUDES:
- 32MB nVidia Video Card
- Soundblaster™ Live! Value
- Boston Accoustics™ BA265 Speakers
- 56K Data/Fax/Voice Modem



Gateway™ Essential 1000.
Ideal Home/Office PC.

$2,699*
Plus delivery**

- Intel® Pentium® III Processor 1000MHz
- 64MB SDRAM
- EV500 15" Monitor (13.9" Viewable)
- 20GB Hard Drive
- 1.44MB 3.5" Floppy Disk Drive
- 48 x Max CD ROM Drive
- Microsoft® Windows Me°
- Microsoft® Works Suite 2000°
- Gateway™ 1 Year Desktop Warranty

INCLUDES:
- Integrated Video & Stereo Audio
- Boston Acoustics™ BA265 Speakers
- Integrated 56K Data/Fax/Voice Modem



Gateway™ Performance 1500.
Ultimate Power.

$5,999*
Plus delivery**

- Intel® Pentium® 4 Processor 1500MHz
- 128MB PC800 RDRAM
- 45GB Ultra ATA Hard Drive
- VX720 17" Monitor (16" Viewable)
- Radeon 32MB SCRAM 4 x AGP w/DVI, TV-OUT
- 48 x Max CD ROM Drive
- Microsoft® Windows Me°
- Microsoft® Works Suite 2000°
- Gateway™ 1 Year Desktop Warranty

INCLUDES:
- Sound Blaster™ Live! Value
- Boston Acoustics® BA735 Speakers
- 56K Data/Fax/Voice Modem



Gateway™ Performance 1000.
Ideal Gaming PC.

$4,999*
Plus delivery**

- Intel® Pentium® III Processor 1000MHz
- 128MB SDRAM
- EV700 17" Monitor (15.9" Viewable)
- Radeon 32MB SCRAM 4 x AGP w/DVI, TV-OUT
- 10GB Ultra ATA Hard Drive
- 1.44MB 3.5" Floppy Disk Drive
- 16 x DVD ROM Drive
- DVD Adventure Suite
- Microsoft® Windows Me°
- Microsoft® Works Suite 2000°
- Gateway™ 1 Year Desktop Warranty

INCLUDES:
- Sound Blaster™ Live! Value
- Boston Acoustics™ BA735s Speakers
- 56K Data/Fax/Voice Modem



Gateway™ Solo 1150LS.
Affordable Notebook.

$2,499*
Plus delivery**

- 12.1" HPA Display
- Intel® Celeron™ Processor 550MHz
- 64MB SDRAM
- 128K Level 2 Cache
- 4MB AGP Graphics Accelerator
- 5GB Ultra ATA Hard Drive
- Integrated 24 x Max CD ROM Drive
- 16-bit Stereo Sound, Internal Speakers
- Integrated Modem
- 1 Type III PCMCIA slot
- NiMH battery
- Microsoft® Windows Me°
- Microsoft® Works Suite 2000°
- 338 x 267 x 55mm – 3.05kg
- Gateway™ 1 Year Notebook Warranty

Includes Windows Millennium Edition – The Home Version of the World's Favourite Software.



Save on Gateway's Interactive CD ROM Learning Library

With every Intel® based Gateway™ System, you can save on Gateway's Interactive CD ROM Learning Library. Microsoft® Works 2000 Training Suite usually $549, with every PC purchase only $219. Microsoft® Office SBE Training Suite usually $769, with every PC purchase only $329. (Beginner, intermediate and advanced levels included).

$AVE

FOR THOSE OF YOU OBSESSED WITH LOOKS.



The Gateway™ Solo 3350XL.

FOR THOSE OF YOU OBSESSED WITH POWER

MODEL	Gateway™ Solo 3350XL
MONITOR	• XGA DISPLAY (12.1 INCH ACTIVE MATRIX TFT)
PROCESSOR	• INTEL® PENTIUM® III PROCESSOR 600MHZ WITH SPEEDSTEP TECHNOLOGY FOR MAXIMUM BATTERY LIFE
RAM	• 128MB SDRAM
CACHE INTERNAL	• 256K LEVEL 2 CACHE
VIDEO GRAPHICS	• 4MB AGP GRAPHICS ACCELERATOR
HARD DRIVE	• 20GB ULTRA ATA HARD DRIVE
CD ROM DRIVE	• EXTERNAL 10 x MIN / 24 x MAX CD ROM
NETWORK	• INTEGRATED 3COM 10/100 ETHERNET NETWORK
SOUND	• 16-BIT STEREO SOUND, INTERNAL SPEAKER
MODEM	• INTEGRATED 56K DATA/FAX MODEM
EXPANSION	• 1 TYPE II PCMCIA SLOT
COLOURS	• CHOICE OF BLUE OR SILVER
BATTERY	• LITHIUM ION BATTERY
SOFTWARE	• MICROSOFT® WORKS SUITE 2000°
SIZE/ WEIGHT	• ONLY 1.7KG, 25.7MM THIN (WEIGHT EXCLUDES AC ADAPTOR AND EXTERNAL CD)
LIMITED WARRANTY	• GATEWAY™ 1 YEAR NOTEBOOK WARRANTY
PRICE	• $4,299 PLUS DELIVERY*

Includes Windows Millennium Edition – The Home Version of the World's Favourite Software.

Gateway™ stores open 7 days:

Sydney: 225 Clarence Street. **Castle Hill:** Castle Towers. **Chatswood:** 380 Victoria Avenue. **Moore Park:** Homemakers Supacenta. **North Sydney:** Greenwood Plaza (Monday-Friday). **Warringah:** Warringah Mall Shopping Centre. **Melbourne:** 388 Bourke Street. **Preston:** Northland Shopping Centre. **Chadstone:** Chadstone Shopping Centre. **Adelaide:** 58 Gawler Place. **Brisbane:** 47-79 Elizabeth Street. **Mt. Gravatt:** Garden City Shopping Centre (Monday-Saturday). **Canberra:** Petrie Plaza Entrance, Canberra Centre. **Perth:** 938 Hay Street. **Booragoon:** Garden City Shopping Centre.

OVER 50 TELSTRA SHOPS. 13 1800 | TAILOR AND ORDER YOUR PC 24 HOURS A DAY. www.gateway.com.au | CALL GATEWAY™ 1300 302 559

intel inside pentium III

©2000 Gateway Pty Ltd. All rights reserved. Gateway and the stylised logo are trademarks of Gateway Pty Ltd. Intel, the Intel Inside logo and Pentium are registered trademarks of Intel Corporation. All brands and product names are trademarks of their respective companies. Prices include tax but exclude freight, handling and insurance. Prices are subject to change without notice or obligation. †Based on revenue, according to Gartner Group/Dataquest US PC Quarterly Statistics, 1999. *All software included is OEM version only.

GAT196/APC/BRP

Gateway™ People Rule.

FOR THOSE OF YOU OBSESSED WITH LOOKS.



The Gateway™ Solo 3350XL.

FOR THOSE OF YOU OBSESSED WITH POWER

MODEL	Gateway™ Solo 3350XL
MONITOR	• XGA DISPLAY (12.1 INCH ACTIVE MATRIX TFT)
PROCESSOR	• INTEL® PENTIUM® III PROCESSOR 600MHZ WITH SPEEDSTEP TECHNOLOGY FOR MAXIMUM BATTERY LIFE
RAM	• 128MB SDRAM
CACHE INTERNAL	• 256K LEVEL 2 CACHE
VIDEO GRAPHICS	• 4MB AGP GRAPHICS ACCELERATOR
HARD DRIVE	• 20GB ULTRA ATA HARD DRIVE
CD ROM DRIVE	• EXTERNAL 10 x MIN / 24 x MAX CD ROM
NETWORK	• INTEGRATED 3COM 10/100 ETHERNET NETWORK
SOUND	• 16-BIT STEREO SOUND, INTERNAL SPEAKER
MODEM	• INTEGRATED 56K DATA/FAX MODEM
EXPANSION	• 1 TYPE II PCMCIA SLOT
COLOURS	• CHOICE OF BLUE OR SILVER
BATTERY	• LITHIUM ION BATTERY
SOFTWARE	• MICROSOFT® WORKS SUITE 2000[2]
SIZE/ WEIGHT	• ONLY 1.7KG, 25.7MM THIN (WEIGHT EXCLUDES AC ADAPTOR AND EXTERNAL CD)
LIMITED WARRANTY	• GATEWAY™ 1 YEAR NOTEBOOK WARRANTY
PRICE	• $4,299 PLUS DELIVERY*

Includes Windows Millennium Edition – The Home Version of the World's Favourite Software.

Gateway™ stores open 7 days:

Sydney: 225 Clarence Street. **Castle Hill:** Castle Towers. **Chatswood:** 380 Victoria Avenue. **Moore Park:** Homemakers Supacenta. **North Sydney:** Greenwood Plaza (Monday-Friday). **Warringah:** Warringah Mall Shopping Centre. **Melbourne:** 388 Bourke Street. **Preston:** Northland Shopping Centre. **Chadstone:** Chadstone Shopping Centre. **Adelaide:** 58 Gawler Place. **Brisbane:** 47-79 Elizabeth Street. **Mt. Gravatt:** Garden City Shopping Centre (Monday-Saturday). **Canberra:** Petrie Plaza Entrance, Canberra Centre. **Perth:** 938 Hay Street. **Booragoon:** Garden City Shopping Centre.

OVER 50 TELSTRA SHOPS. 13 1800 | TAILOR AND ORDER YOUR PC 24 HOURS A DAY. www.gateway.com.au | CALL GATEWAY™ 1300 302 559

intel inside pentium III

©2000 Gateway Pty Ltd. All rights reserved. Gateway and the stylised logo are trademarks of Gateway Pty Ltd. Intel, the Intel Inside logo and Pentium are registered trademarks of Intel Corporation. All brands and product names are trademarks of their respective companies. Prices include tax but exclude freight, handling and insurance. Prices are subject to change without notice or obligation. †Based on revenue, according to Gartner Group/Dataquest US PC Quarterly Statistics, 1999. ‡All software included is OEM version only.

GAT196/APC/BRP

Gateway™ People Rule.

FOR THOSE OF YOU OBSESSED WITH LOOKS.



The Gateway™ Solo 3350XL.

FOR THOSE OF YOU OBSESSED WITH POWER

MODEL	Gateway™ Solo 3350XL
MONITOR	• XGA DISPLAY (12.1 INCH ACTIVE MATRIX TFT)
PROCESSOR	• INTEL® PENTIUM® III PROCESSOR 600MHZ WITH SPEEDSTEP TECHNOLOGY FOR MAXIMUM BATTERY LIFE
RAM	• 128MB SDRAM
CACHE INTERNAL	• 256K LEVEL 2 CACHE
VIDEO GRAPHICS	• 4MB AGP GRAPHICS ACCELERATOR
HARD DRIVE	• 20GB ULTRA ATA HARD DRIVE
CD ROM DRIVE	• EXTERNAL 10 x MIN / 24 x MAX CD ROM
NETWORK	• INTEGRATED 3COM 10/100 ETHERNET NETWORK
SOUND	• 16-BIT STEREO SOUND, INTERNAL SPEAKER
MODEM	• INTEGRATED 56K DATA/FAX MODEM
EXPANSION	• 1 TYPE II PCMCIA SLOT
COLOURS	• CHOICE OF BLUE OR SILVER
BATTERY	• LITHIUM ION BATTERY
SOFTWARE	• MICROSOFT® WORKS SUITE 2000[2]
SIZE/ WEIGHT	• ONLY 1.7KG, 25.7MM THIN (WEIGHT EXCLUDES AC ADAPTOR AND EXTERNAL CD)
LIMITED WARRANTY	• GATEWAY™ 1 YEAR NOTEBOOK WARRANTY
PRICE	• $4,299 PLUS DELIVERY*

Includes Windows Millennium Edition – The Home Version of the World's Favourite Software.

Gateway™ stores open 7 days:

Sydney: 225 Clarence Street. **Castle Hill:** Castle Towers. **Chatswood:** 380 Victoria Avenue. **Moore Park:** Homemakers Supacenta. **North Sydney:** Greenwood Plaza (Monday-Friday). **Warringah:** Warringah Mall Shopping Centre. **Melbourne:** 388 Bourke Street. **Preston:** Northland Shopping Centre. **Chadstone:** Chadstone Shopping Centre. **Adelaide:** 58 Gawler Place. **Brisbane:** 47-79 Elizabeth Street. **Mt. Gravatt:** Garden City Shopping Centre (Monday-Saturday). **Canberra:** Petrie Plaza Entrance, Canberra Centre. **Perth:** 938 Hay Street. **Booragoon:** Garden City Shopping Centre.

OVER 50 TELSTRA SHOPS.	TAILOR AND ORDER YOUR PC 24 HOURS A DAY.	CALL GATEWAY
13 1800	www.gateway.com.au	1300 302 559

intel inside
pentium III

©2000 Gateway Pty Ltd. All rights reserved. Gateway and the stylised logo are trademarks of Gateway Pty Ltd. Intel, the Intel Inside logo and Pentium are registered trademarks of Intel Corporation. All brands and product names are trademarks of their respective companies. Prices include tax but exclude freight, handling and insurance. Prices are subject to change without notice or obligation. †Based on revenue, according to Gartner Group/Dataquest US PC Quarterly Statistics, 1999. ²All software included is OEM version only.

GAT196/APC/BRP

Gateway™
People Rule.

LOR A COMPUTER YOUR NEEDS.

STORE FOR ALL THE LATEST PRICES.



Gateway™ Solo 5300XL.
Power Performance Pack.

$3,699*
Plus delivery**

- 14.1" Active Matrix Display (TFT)
- Intel® Pentium® III Processor 650MHz
- 64MB SDRAM
- 256K Level 2 Cache
- S3 Savage AGP Graphics – 8MB
- 6GB Ultra ATA Hard Drive
- Modular 1.44MB Floppy Disk Drive
- 24 x Max CD ROM Drive
- 16-bit Stereo Sound, Internal Speakers
- Integrated 56K Data/Fax Modem
- 2 Type II or 1 Type III PCMCIA slot
- Lithium Ion battery
- Microsoft® Windows Me°
- Microsoft® Works Suite 2000°
- 311 x 253 x 35.2mm – 2.45kg
- Gateway™ 1 Year Notebook Warranty



Gateway™ Solo 3350XL.
Ultra Thin Powerhouse.

$4,299*
Plus delivery**

- 12.1" XGA Active Matrix Display (TFT)
- Intel® Pentium® III Processor 600MHz
- 128MB SDRAM
- 256K Level 2 Cache
- 4MB AGP Graphics Accelerator
- Choice of Blue or Silver
- 20GB Ultra ATA Hard Drive
- Integrated 3Com 10/100 Ethernet network
- External 24 x Max CD ROM Drive
- 16-bit Stereo Sound, Internal Speaker
- Integrated 56K Data/Fax Modem
- 1 Type II PCMCIA slot
- Lithium Ion battery
- Microsoft® Windows Me°
- Microsoft® Works Suite 2000°
- Only 25.7mm thin, 1.7kg (Weight excludes AC adaptor and external CD)
- Gateway™ 1 Year Notebook Warranty



Gateway™ Solo 9300SE.
Home/Office Notebook.

$4,599*
Plus delivery**

- 15" Active Matrix Display (TFT)
- Intel® Pentium® III Processor 650MHz
- 96MB SDRAM
- 256K Level 2 Cache
- ATI RAGE Mobility AGP Graphics – 8MB
- 6GB Ultra ATA Hard Drive
- Integrated 1.44MB Floppy Disk Drive
- Integrated 24 x Max CD ROM Drive
- 16-bit Stereo Sound, Internal Speakers
- Integrated 56K Data/Fax Modem
- 2 Type II or 1 Type III PCMCIA slot
- 12-cell Lithium Ion battery
- Casual Carry Case
- Microsoft® Windows Me°
- Microsoft® Works Suite 2000°
- 322 x 264 x 41mm – 3.5kg
- Gateway™ 1 Year Notebook Warranty



Gateway™ Solo 9300XL
Award Winning Notebook.

$5,999*
Plus delivery**

- 15.7" SXGA Active Matrix Display (TFT)
- Intel® Pentium® III Processor 750MHz
- 160MB SDRAM
- 256k Level 2 Cache
- ATI RAGE Mobility AGP Graphics – 8MB
- 20GB Ultra ATA Hard Drive
- Integrated 1.44MB Floppy Disk Drive
- Integrated 8 x DVD ROM Drive
- 16-bit Stereo Sound, Internal Speakers
- Integrated 56K Data/Fax Modem
- 2 Type II or 1 Type III PCMCIA slot
- 12-cell Lithium Ion battery
- Executive Carry Case
- Microsoft® Windows Me°
- Microsoft® Works Suite 2000°
- 334 x 286 x 42mm – 3.9kg
- Gateway™ 1 Year Notebook Warranty

Gateway™ stores open 7 days:

Sydney: 225 Clarence Street. **Castle Hill:** Castle Towers. **Chatswood:** 380 Victoria Avenue. **Moore Park:** Homemakers Supacenta. **North Sydney:** Greenwood Plaza (Monday-Friday). **Warringah:** Warringah Mall Shopping Centre. **Melbourne:** 388 Bourke Street. **Preston:** Northland Shopping Centre. **Chadstone:** Chadstone Shopping Centre. **Adelaide:** 58 Gawler Place. **Brisbane:** 47-79 Elizabeth Street. **Mt. Gravatt:** Garden City Shopping Centre. **Canberra:** Petrie Plaza Entrance, Canberra Centre. **Perth:** 938 Hay Street. **Booragoon:** Garden City Shopping Centre.

OVER 80 TELSTRA SHOPS. 131 800

TAILOR AND ORDER YOUR PC 24 HOURS A DAY. www.gateway.com.au

CALL GATEWAY™ 1300 302 475

intel inside pentium® III

*Offers valid till March 31st 2001 or while stocks last. Not valid with any other offer. **Delivery is available throughout Australia (except to certain remote locations) at $82.50 ($75 + GST) for desktops and $55 ($50+GST) for portables. °All software included is OEM version only (online manuals only).

©2000 Gateway Pty Ltd. All rights reserved. Gateway and the stylised logo are trademarks of Gateway Pty Ltd. Prices include tax but exclude freight, handling and insurance. Intel, the Intel Inside logo and Pentium are registered trademarks and Celeron is a trademark of Intel Corporation. All brands and product names are trademarks of their respective companies. All sales subject to Gateway's limited warranty and standard terms and conditions. GAT 196/APC

Gateway™ People Rule.



Illustration by Warren Taylor

together. The fourth was stuck in the middle of a group of Ten Network options. The basic digital channel ran the same coverage as the normal analog free-to-air broadcast. The other three channels broadcast a scoreboard and two different camera views. The first camera was positioned up high (presumably the top of the stadium), and the other one ran from stumpcam.

The first thing *APC* noticed was that the digital coverage was delayed by five seconds or so compared with the analog coverage. It wasn't clear if this was a technical or self-imposed delay on Nine's part.

Another oddity is the absence of advertising on the three additional channels. This allows you to avoid the ads on the main channel by switching to the additional views provided by other cameras. Ads are commercial TV's bread and butter, so it's hard to see this loophole lasting — at least, not without some sort of subscription system.

The broadcast was widescreen, which worked better on some cameras than others. The high-camera view was excellent, giving the impression you're watching from the stands, but the stumpcam produced a very fish-eyed picture.

Stumpcam's perspective was unusual in more ways than one. It was excellent when the strike was at the camera end, but less effective when the bowler was at that end. When Brian Lara was caught out, stumpcam captured his strike, but the catch was far off camera. This highlights an important limitation of digital TV's user-selectable images. When something happens live off camera, the viewer can't access a replay from a different angle, as is possible with DVDs that support multiple camera angles.

However, the multiple camera view certainly gives you an appreciation of the TV director's art, as well as a peek at how certain shots are planned. In one instance, the regular broadcast went to an ad break, and the stands camera panned quickly to a sunset shot. This seemed odd until the regular broadcast resumed and used the shot to accompany some weather commentary. As channel swapping involved long pauses, *APC* eventually gave up and watched the regular coverage with the aid of a frosty beverage.

The bush bash

Theoretically, digital TV should be a boon for rural areas. Digital TV excels at delivering clear and constant reception — something rural areas lack due to distance and physical obstacles. Digital TV would seem to be well suited to this market, but current legislation gives regional broadcasters until 2003 to begin digital transmissions. On one hand, this could be good news for rural TV fanatics — by then the cost of digital televisions and set-top boxes should have dropped considerably. On the other hand, the technologies used will more than likely be those currently being implemented in metropolitan areas — so by then they'll be three years behind the technology curve, further accenting the country/city divide.

I've seen the future . . .

It's still early days for digital TV, and if the promises of the incumbent broadcasters are to be believed, the sky's the limit. They're in the best of positions as far as digital TV is concerned. All other competition has been blocked until at least 2003. Existing broadcasters were given bandwidth free. It's highly unlikely that any new players will be treated as generously.

Perhaps the most contentious issue in digital TV concerns datacasting. Digital spectrum allows for a lot of bandwidth, which translates into the ability to send a lot of data over the airwaves. It was expected that data-based services connected to the Net would be developed alongside regular TV services, and large media entities such as Fairfax and News Ltd were all set to develop such services.

However, the government created a seemingly impenetrable divide between data and broadcasting with the Broadcasting Services Amendment (Digital Television and Datacasting) Bill. The bill places a series of restrictions on datacasters, essentially blocking the production of TV-style programming along with any data transmissions. Some areas of the legislation are rather 'fuzzy'; for example, the status of streaming media on the Web sites of existing broadcasters is unclear. In any case, the separation of content types has been enough to send most aspiring datacasters packing.

So, is it worth it? At the moment, no. Like most new technologies, the costs associated with digital TV are high, and most of the services that should make it compelling are still a long way off. In other cutting-edge fields, this is par for the course, but in consumer electronics, where people expect new products to work immediately and fully, it's a potential recipe for disaster.

Thomson Set Top Box

Contact Dick Smith Electronics
Phone (02) 4721 1544
Online www.dicksmith.com.au
Price $698

Full colour, superior economy. $119.[RRP]

BRILLIANT PHOTO COLOUR on plain paper, super operating economy, high speed blacks, PhotoRealism and automatic image improvement. You can't go wrong with the super value BJC-1000SP.



PhotoRealism produces colours between colours.



PhotoRealism.™ When superior photographic reproduction counts.
The optional PhotoRealism cartridge is ideal for high resolution paper, glossy photo paper and high gloss film. Low-density inks vary colour saturation per dot to dramatically increase the colour combinations, reduce graininess and smooth tonal gradations.

Brilliant plain paper photo quality automatically.
The BJC™-1000SP uses advanced colour definition routines for half-tones and areas of low colour density. A separate, selectable function called Photo Optimiser is included in the printer control software. It automatically adjusts for defects in exposure, highlights and shadows, and prints accordingly with standard inks designed to optimise quality on low-cost plain paper.



Before.

After.



Better Internet images. Image Optimiser, a printer control software feature, can automatically "correct" low-resolution images up to the printer's maximum resolution.



Reduced operating costs.
Using a special resolution matrix, the BJC-1000SP features a Super Economy mode that vastly improves operating economy without the definition sacrifices common to so many draft modes. It effectively quadruples output from both the black and colour cartridges.[1]

Print banners up to 6 A4 pages long, envelopes, overhead transparencies, T-shirt transfers, and even choose an optional fluorescent ink cartridge for display effects.





High quality blacks at high speed.
The optional high capacity black ink cartridge uses 64 print nozzles for high print speeds. The selectable text smoothing mode goes up to 720 dpi to maximise text quality.



Optional BC-03 high capacity black ink cartridge.

BJC-1000SP
Just $119[RRP]

3-YEAR WARRANTY OPTION

Canon Customer Care. The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support. For more information call 1800 021 167.

Canon

Price shown is recommended retail price including GST. Canon® and the Canon logo are registered trademarks, and Bubble Jet, BJC and PhotoRealism are trademarks of Canon Inc. 1. Capacity for colour based on A4 pages at 7.5% coverage. Capacity for black & white based on A4 pages at 5% coverage per page. Specifications are subject to change without notice. Canon Australia Pty Ltd ACN 005 002 951. ABN 66 005 002 951.

CS105

PowerBook G4

The long-awaited PowerBook G4 is hot — not just because of its avant-garde design, but from actual burning heat.

The PowerBook is made of titanium, a light-weight metal named in honour of the mighty Greek Titans. Titanium is used to make missiles, nuclear waste storage facilities, spaceships and golf clubs. The PowerBook has four ventilation outlets, but metal conducts heat more efficiently than plastic, so after an hour of steady use the PowerBook literally starts to cook.

After a long delay, Apple has come up with a notebook design that can accommodate the G4 processor. Until now, Mac notebook users have only had the slower G3 processor. A major barrier to introducing the G4 has been the unacceptable level of heat generated by the faster processor, a design flaw that obviously needs more work. However, Apple has compensated for the delay with a number of features that raise the stakes across the whole notebook market.



The PowerBook G4 is only 2.5cm thick and weighs just 2.4kg. The titanium casing gives the PowerBook a smooth, silvery sheen. Continuing Apple's strategy of employing flashy designs to catch the eye of the PC user, the PowerBook does not look like a Mac. The only similarity to the old PowerBook is the large, glowing Apple icon on the back of the screen.

The major advance is the wide-screen, 15.2in active matrix display. It gives multimedia professionals a reason to consider working from a portable. The elongated display is useful for working on different applications side by side and it's great for watching DVDs in wide-screen format. The PowerBook has a slot-loading DVD player which loads smoothly and quickly. However, the DVD player had a tendency to freeze, and the performance suffered when *APC* used other applications at the same time.

The PowerBook was noticeably faster than the previous model and applications launched quickly. However, menus were often slow to load and tended to hang. The PowerBook also took a long time to wake up from sleep mode, but was still faster than the previous PowerBook.

The PowerBook is aimed squarely at the corporate and high-end consumer markets. *APC* looked at a 500MHz model, with 256M of RAM and a 20G hard drive, priced at $7,495. There is also a 400MHz model with 128M of RAM and a 10G hard drive for $5,495. Apple has priced the PowerBook G4 in line with the PowerBook G3, and it is slightly cheaper than those from PC makers such as IBM and Compaq — and they only have 14.1in screens.

The PowerBook has ample room for extras, with a FireWire port and two USB ports. It has a 56K internal modem and Ethernet port, as well as an AirPort antenna and an infra-red port. There is a TV-out port to connect straight to a television and a VGA port to connect to another monitor. Graphic support is adequate with a 128 graphics controller with 8M of video memory. The PowerBook also has a PC Card and CardBus slot to download images from a digital camera.

Apple has improved a few key features, but other aspects of the PowerBook are slightly inferior. The two 16-bit stereo speakers positioned on either side of the keyboard are tinny and muted, but sound quality is a lot better through the headphone socket. The keyboard is dwarfed by the wide screen and Apple could have used the extra space to enlarge the tiny function (F1 to F12) and arrow keys. The keyboard also has a flimsy feel, similar to the keyboard on Apple's low-end iBook.

The trackpad is not as smooth as in previous PowerBooks or the iBook. The surface of the trackpad looks and feels like titanium, but it is made of a different material.

Battery life is not as good as the iBook. Apple claims the PowerBook can last five hours, but you can expect just over three. The battery has a built-in light display that measures remaining battery life more reliably than the system software. The PowerBook runs for about one minute on an internal power supply to allow you to change the battery while the notebook is running. The battery clips out easily, but a second battery costs an extra $275.

The metal case is easy to dismantle by unscrewing the bottom panel, a feature that will appeal to the hands-on PC user. The keyboard also lifts out for a fast memory upgrade.

Apple's decision to make the PowerBook G4 entirely out of metal is a risky design experiment. IBM used a titanium composite in parts of the ThinkPad series, but the PowerBook is strikingly different to anything currently available and the consumer reaction will be closely watched by notebook manufacturers everywhere.

Apple was hit hard by the downturn in the computer market late last year and is counting on the Mac faithful to update their old PowerBooks and drag the company back to profitability in the first quarter of 2001. However, Apple also desperately needs to attract more converts from the mass of PC users.

Even if the PowerBook fails to catch on, it sets a new standard in what you should expect from a notebook.

Fiona Angus

Pros	Wide screen, slot-loading DVD Striking appearance
Cons	Performance could be better

Contact Apple
Phone 13 36 22
Online www.apple.com.au
Price $7,495

Big printer performance.

Small printer price & economy. $159.[RRP]

HIGH RESOLUTION COLOUR, high-speed blacks and superior operating economy with easy to use, broad flexibility for Windows and Mac. Plus optional PhotoRealism and scanner cartridge.



Exceptional results, easily.
The inks are optimised for plain paper with resolutions up to 720 x 360 dpi that can be automatically enhanced with *Drop Modulation Technology.*™ Variable drop sizes are placed in any of five "strike pattern" combinations to smooth colour gradations and improve tonal quality.



Reduced operating costs.
Super Economy mode uses a special resolution matrix to improve operating economy without the definition sacrifices common to so many draft modes. It effectively quadruples output from both the black and colour cartridges.[1]



Better Internet images, special effects.
Image Optimiser can automatically "correct" low-resolution Internet images up to the printer's maximum resolution. Turn photos into simulated illustrations and create sepia and mono hues, print banners up to 6 A4 pages long, envelopes, overheads and even T-shirt transfers.





Duplexing, high speed blacks. A new driver allows manual duplex on plain paper with standard inks. For B&W only, an optional dedicated black ink cartridge with 128 print nozzles offers print speeds up to 5 pages per minute.[2]



Built-in parallel and USB interfaces for Windows and Mac.[3]

The optional scanner cartridge captures colour photos and text with resolutions up to 360 dpi.



Automatic Image Improvement, easily.
Advanced colour routines help define half-tones and areas of low colour density. Photo Optimiser automatically adjusts for defects in exposure, highlights and shadows and prints accordingly.

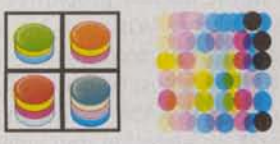








Drop Modulation Technology.
Smaller ink drops, about ½ the size, are automatically mixed with standard drops to enhance quality.



Layering variable ink densities in each pixel lets you print colours between colours.

5 times the photographic colour combinations.
Optional PhotoRealism™ inks vary the saturation so that a single dot could have 0%, 33%, 67% or 100% of a colour. This produces up to five times as many colour combinations as conventional CMYK inks for better half-tones and less grain.

3-YEAR WARRANTY OPTION

Canon Customer Care.
The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support. For more information call 1800 021 167.

BJC™-2100SP
Just $159[RRP]

Canon

Price shown is recommended retail price including GST. Canon® and the Canon logo are registered trademarks, and Bubble Jet, BJC, Drop Modulation Technology and PhotoRealism are trademarks of Canon Inc. Microsoft®, Windows® and Windows NT® are registered trademarks of Microsoft Corporation in the US and other countries. Apple®, Macintosh®, Mac® and Mac OS® are registered trademarks of Apple Computer Inc in the US and other countries. All other trademarks are the property of their respective owners. 1. B&W output for BC-20 ink cartridge at 1500 characters per page and colour output for *BC-21e* measured at 7.5% coverage. 2. Duplex printing for Windows 95/98 only. B&W print speeds require optional black ink cartridge. Print speeds may vary with the content of the document & the processing speed of the host computer. 3. Printer driver support is provided for Windows 95/98/2000/NT 4.0 via the parallel port and Windows 98/2000 and Mac OS 8.1 via USB port. USB interface can only be guaranteed with pre-installed Windows 98/2000 and Mac OS 8.1 or later. Specifications are subject to change without notice. Canon Australia Pty Ltd ACN 005 002 951 ABN 66 005 002 951.

CS106

Appian Traveler



Multimonitor support for laptops is a relatively new development. A few cards specifically designed to provide extended desktop support have been released over the last 18 months. This support is particularly useful for people who frequently need to make presentations on the go.

A standard PC Card, the Traveler comes with a digital output cable and an adaptor for analog monitor support.

Officially, the Traveler only supports Windows 2000 and Windows 98, but *APC* initially tried installing the card on a system running Windows Me, as many new laptops now come with this OS. Autodetection found the card's chipset, the Silicon Motion Lynx3DM, but not the specific card. Attempts to use the Windows 98 drivers resulted in a system crash every time we tried to access the Settings tab in the display properties. Obviously, the lacklustre Windows Me support is a significant shortcoming.

Its 2D support is very good and the 4M of onboard RAM comes in handy for DirectX acceleration and video playback. The multimonitor support is also top notch. The maximum output resolution is 1,280 by 1,024 at a refresh rate of 60Hz. This is good, but other cards such as the Margi Display-To-Go can maintain 1,600 by 1,200 at 60Hz.

The unit comes with Appian's multimonitor management software, HydraVision. This rudimentary application is a little short on features, but the MultiDesk component, which allows you to have numerous virtual desktops and to switch between them, is useful.

Hot-swapping support is also great, and once you've installed the drivers you don't even need to reboot when you reinsert the card — it automatically picks up the card and the attached monitor, and maps it as an extended desktop.

The Traveler's biggest drawback is its price. At $966, it's a rather pricey add-on, especially as you can get a good quality laptop for about two to three times that price. Also, its local price is a lot higher than in the US, where the card retails for $US329. The fact that you can now purchase laptops with built-in extended desktop support also seriously undermines one of the card's main selling points.

Appian makes it quite clear that this is a card for dual-head and extended desktop fanatics. If you absolutely must have multiple monitor outputs, and don't feel like forking out the full price for an entirely new laptop, the Appian Traveler might be a worthy purchase.

Daniel Gardiner

Pros Does its tasks well
Cons Expensive
No official Windows Me drivers

Contact Lako Vision
Phone (03) 9852 7444
Online www.lakovision.com.au
Price $966

Rome MP3 II UP-322



In *APC*'s review of MP3 players last year (see *APC* May 2000, page 70), the Rome MP3 player was a standout, not so much for functions, build quality or features, but for its incredible versatility. *APC* was so impressed that later in the year it took out our annual Just Plain Cool award (*APC* January, page 66).

Now there is the new Rome MP3 II UP-322 player. This new unit is based on the previous model, but it has been redesigned with many improvements and new features. The main unit still looks like a cassette, but the control buttons are now arrayed across the side of the player.

One of the most notable additions is a remote control with an LCD on the headphone cord. The remote is an extension of the player, and you can use it to change equaliser settings, skip tracks and change volume. Selections are made with a handy jog button.

The readout only displays the current track and track time, not the track titles or ID3 information. This can be confusing when you forget your track selections. The screen is backlit and easy to read. The quality of the ear-bud headphones is better than most supplied with portable players. They were clear and crisp sounding, and could easily handle maximum level volume from the player.

The player's capacity has doubled to 64M, plus there is an MMC (multimedia card) slot for adding an extra 64M. The included software has a Windows Explorer-like interface for selecting tracks. Uploading to the player via USB is done by dragging and dropping the MP3s to the player section of the software. If you have an MMC you can toggle between it and the onboard capacity with a button. Space taken and memory remaining are displayed, and you can also change the order of uploaded MP3s.

The Rome MP3 player not only looks like a cassette, but it can function as one as well. Similar to the early discman car-adaptor kits, the magnetic head on the player allows it to function in any tape player, whether it's in a stereo at home or in a car. You turn the Rome MP3 on, pop it in the player and use the skip forward and backward buttons on the cassette player to select tracks. The unit comes with a rechargeable NiMH battery that is charged within the player — the earlier version has a separate charger. As a bonus for car listeners, the package comes with a cigarette lighter adaptor so you can recharge while driving.

Darren Ellis

Pros Excellent audio
Great features
Cons Too expensive

Contact Rome Technology
Phone (02) 9513 8833
Online www.rome.com.au
Price $599

1440 dpi, plus new, absolutely brilliant colours for only $279.[RRP]

SUPERIOR OPERATING ECONOMY high speed printing, parallel & USB ports, plus optional PhotoRealism and scanner cartridge.

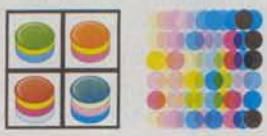


Very smart monitoring of absolutely brilliant colours.
Both the standard and optional inks have a higher optical density to produce more vivid, natural looking colours. They are contained in separately replaceable transparent ink tanks, and each is separate from the print head. A beam of light measures ink status *(right)* to allow the printer driver to alert you when they are low. You replace only one colour at a time, and because the standard inks are optimised for low cost plain paper, you can keep operating costs down.



Smart monitoring system.

Colours between the colours with optional PhotoRealism.™
Special inks allow the S400 to vary the saturation level per dot (e.g. 33%, 67%) for up to 5 times as many colour combinations as conventional CMYK inks. This result is smoother colour gradations with vastly reduced grain.



PhotoRealism produces colours between colours.



Turn your printer into a 720 dpi colour scanner with the optional scanner cartridge, pictured right.



Better print quality automatically.
The printer control software (driver) helps you maximise print quality. Photo Optimiser adjusts for defects in exposure, highlights and shadows while Automatic Tone Control reduces the 'colour noise' often common to compact digital cameras. Image Optimiser prints low-resolution Internet images up to the maximum resolution supported by the printer. All functions can be used in automatic mode.



1440 dpi, variable ink drop sizes, blacker black.
Quality is exceptional, even on low cost plain paper with resolution up to 1440 x 720 dpi, plus Drop Modulation Technology™ with variable ink drop sizes. B&W correspondence is enhanced using new, high optical density black pigment inks for superior print quality.

S400
Just $279[RRP]

Parallel and USB interface. Both ports are built-in for Windows and Macintosh.[2]

Canon Customer Care.
The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support.
For more information call 1800 021 167.

3-YEAR WARRANTY OPTION



High speed printing for all colours.
Using large print heads and bi-directional printing the S400 prints up to 4 colour pages per minute. An optional, dedicated black ink tank and cartridge is capable of B&W speeds up to 9 pages per minute.[1]

Canon

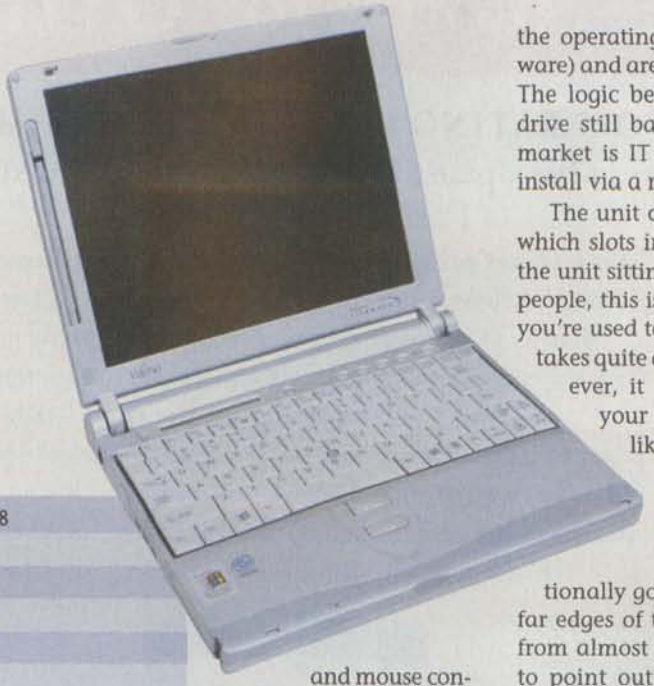
Price shown is recommended retail price including GST. Canon® is a registered trademark and Bubble Jet, Drop Modulation Technology and PhotoRealism are trademarks of Canon Inc. Microsoft®, Windows® and Windows NT® are registered trademarks of Microsoft Corporation in the US and other countries. Apple®, Macintosh®, Mac® and Mac® OS are registered trademarks of Apple Computer Inc in the US and other countries. All other trademarks are the property of their respective owners. 1. Print speeds vary with the content of the document and the processing speed of the host computer. B&W print speeds require optional BC-30e black cartridge. 2. Printer driver support is provided for Windows® 95, Windows® 98, Windows® 2000, Windows® Me, Windows NT® 4.0 for the parallel port and pre-installed Windows® 98, Windows® 2000, Windows® Me and Mac® OS 8.1+ or 9.X using the USB port. Specifications are subject to change without notice. Canon Australia Pty Ltd ACN 005 002 951. ABN 66 005 002 951.
CS9808/3

Fujitsu LifeBook B-2178

The quest for smaller and smaller notebooks has produced some interesting designs. Fujitsu has now entered the fray with the LifeBook B-2178, a laptop that draws design inspiration from notebooks such as the Sony Vaio (see *APC* February, page 24) and the Apple titanium PowerBook G4 (see page 36).

The LifeBook looks quite impressive; Fujitsu has taken the view that brushed metal is the new black for notebooks. The result is quite atractive, but there could be problems with reflection on a bright day.

As with most small notebooks, you have to put up with rather cramped keyboard and mouse conditions. The mouse uses an IBM-like control stick, but the mouse buttons are far too small and easy to miss. It's unclear why it's necessary for the buttons to be so small, as there's plenty of room around the base of the LifeBook.



Product	Fujitsu LifeBook B-2178
Contact	Fujitsu
Phone	(02) 9776 4555
Online	www.fujitsu.com.au
Price	$3,920
Specifications	
Processor	Celeron 500
Secondary cache	640K
RAM and type (maximum)	128M
Hard disk	15G
Hard disk controller	Intel 82440MX PCI bus master controller
Hard disk file system	FAT32
Graphics card	ATI Rage Mobility-M
Graphics driver name and version	ati2drab.drv M6.11.75-T01
Tested resolution/ colour depth/refresh rate	1,024 by 768, 16 bit, 60Hz
CD/DVD/CD-R drives	Optional
Soundcard	Intel 82440MX AC'97 audio controller
Modem	Internal Lucent Softmodem
OS available	Windows Me
Benchmark results	
Business Graphics WinMark 99	118
High-End Graphics WinMark 99	399
Business Disk WinMark 99	1,090
High-End Disk WinMark 99	3,560
Business Winstone 2001	22
SYSmark2000	115
Battery Mark	
Battery optimised	3 hours, 10 minutes
Max performance	2 hours, 20 minutes

Maximum refresh rate for the video chip was 60Hz

The product used in these tests is a shipping version available to the public at the time of publication unless otherwise stated. All specifications are submitted by the vendor and *APC* accepts no responsibilty for any errors. Winstone, WinBench and associated products are registered trademarks of the Ziff-Davis Publishing Company.

Perhaps part of the reason for the small mouse buttons is to encourage you to use the touchscreen feature. The laptop comes with a stylus to keep your screen clear of grubby fingerprints. Calibration is vital — *APC* found that the stylus worked well on most of the screen, but at the very top, it tended to strike a little lower than where the stylus actually was — even after calibration

One important drawback with the LifeBook is that the basic model that *APC* tested doesn't include a CD-ROM drive; it's an 'optional extra'. You'll discover exactly how 'optional' the first time you have to reinstall the operating system (or any other software) and are far from a network resource. The logic behind not including the CD drive still baffles *APC*, unless the target market is IT administrators who always install via a network.

The unit comes with a port replicator, which slots in easily enough, but leaves the unit sitting at an odd angle. For some people, this is a good typing angle, but if you're used to flat notebook keyboards, it takes quite a bit of acclimatisation. However, it does force the notebook off your lap, which is important as, like many other ultraportables with high-end processors, the LifeBook really cooks after a while.

The LifeBook has an exceptionally good screen; it stretches to the far edges of the bezel and it's very clear from almost every angle. Fujitsu is keen to point out its nonreflective qualities, and *APC* has to concur. Even under bright light, the screen is still very visible, but the silvery casing becomes a bit tiring on the eyes.

The LifeBook's benchmark scores were typical of a machine running a 500MHz Celeron processor: good enough for a notebook, but nothing spectacular. Its overall benchmark scores indicate that it would be good for simple business computing, but not exceptional for anything more graphics intensive. Where the LifeBook did kick butt was in battery life; in battery-saving mode it lasted just over three hours — a good hour better than most notebooks its size.

At $3,920, the LifeBook is cheaper than many ultraportables. It's almost $1,000 cheaper than the majority of the notebooks in our last roundup (see *APC* June 2000, page 104), but that was a year ago, and specifications have changed since then. For the same money, you could get a full-sized notebook with a 700MHz processor and better overall performance. However, if size matters, then the LifeBook is a good choice.

Alex Kidman

Pros Nifty stylus
Good-quality screen

Cons No bundled CD drive
Bad mouse-button layout

Super fast dual print heads, 1440 dpi, 6 ink colours. $329.RRP

ULTRA HIGH SPEED, superior operating economy, whisper quiet and brilliant quality. Plus optional 6-colour PhotoRealism.



Advanced print head system.
The compact body utilises a dual print head system designed to satisfy the needs of even the most demanding user. Speed, plain paper quality, extra rich blacks, individually replaceable transparent ink tanks plus optional 6 colour PhotoRealism and high definition colour scanning. The BJC™-6200 offers it all, in one of the quietest printers ever.

A smart ink monitoring system alerts users when a colour is running low. There are individual transparent ink tanks for all colours and each is separate from the print heads, significantly reducing operating costs and allowing you to replace only the empty tank.

1440
dpi plus Drop Modulation Technology

An optional scanner cartridge delivers resolutions up to 720 dpi.

Superior plain paper print quality.
Standard inks are optimised for plain paper. Resolutions go up to 1440 x 720 dpi. Drop Modulation Technology™ automatically adds variable ink drop sizes and the printer control software defines colour more in line with perceptions of the human eye.

BJC-6200
Just $329RRP

USB

Built-in parallel and USB interfaces for Windows and Mac².



Higher speed, blacker black.
A high performance engine with bi-directional printing capable of up to 3 lines per pass results in monochrome text speeds up to 10 pages per minute and colour printing up to 7 pages per minute, making the BJC-6200 easily the fastest printer in its class.¹ Plus the black cartridge employs pigment inks for a richer print density with greater water resistance.

7	10
ppm colour	ppm mono

PhotoRealism™ with 6 ink colours for even more tonal gradation.
Optional low density PhotoRealism inks may be used simultaneously with standard density colour inks. The 6-colour system delivers life-like reproduction, especially on higher paper grades. Tonal gradations are smooth even in difficult to reproduce colours such as skin tones and light, glossy surfaces.



3-YEAR WARRANTY OPTION

Canon Customer Care.
The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support. For more information call 1800 021 167.

Canon

Price shown is recommended retail price including GST. Canon® and the Canon logo are registered trademarks and BJC, Bubble Jet, Drop Modulation Technology and PhotoRealism are trademarks of Canon Inc. Microsoft® and Windows® are registered trademarks of Microsoft Corporation in the US and other countries. Apple®, Macintosh®, Mac® and Mac® OS are registered trademarks of Apple Computer Inc in the US and other countries. All other product, brand and company names are trademarks of their respective owners. 1. Print speed may vary by content of the document and processing speed of the host computer. 2. BJC-6200 USB interface can only be guaranteed with pre-installed Windows® 98/2000/Me and Mac® OS 8.1+ or 9.X, and is supported for Windows® 2000 upgraded from Windows® 98. Specifications are subject to change without notice. Canon Australia Pty Ltd ACN 005 002 951. ABN 66 005 002 951. CS0428

IBM USB Memory Key

Recently, *APC* reviewed a nifty little storage device called the Trek Thumbdrive (*APC* November 2000, page 38). A tiny storage device the size of a packet of chewing gum, it was a reasonably priced gadget tailored for portable storage fanatics.



Five months later, IBM has jumped on the bandwagon with the release of its Memory Key. IBM's entry into the portable storage market is based on M-Systems' DiskOnKey model. In fact, apart from the IBM logos, the Memory Key is identical in almost every way to the DiskOnKey.

The device works by slotting into a spare USB slot. It then shows up as a removable drive in Windows Explorer, just like your other standard hard drives. It uses flash memory, so copying is instantaneous and incredibly reliable; you can throw the thing around as much as you like without worrying about data loss. Once inserted, you can cut, copy and paste to and from the disk as you would any other removable storage device, and it can even be formatted.

Windows Me and Windows 2000 have native support for it. You can just plug it in and your system should mount it as a removable drive. One of its shortcomings is its Windows 98 support; in order for this to work, you need to have the drivers CD to hand, which defeats the whole idea of having a 'portable' storage device. To its credit, the device did work perfectly on Mac and Linux systems, despite not officially supporting either, and we were able to copy to and from different operating systems without any hassles.

Filling the disk to capacity took about 50 seconds, which is about average. Copying from the Memory Key was significantly faster. It took a mere 10 seconds to copy all the data back to a local drive, and deletion was almost instantaneous.

At present, the Memory Key only comes in an 8M version, but it's likely we'll see the release of larger capacity versions in the near future. M-Systems has already announced 16M and 32M versions of its product, and the Thumbdrive is now available in sizes ranging from 8M to 512M, which means that IBM's offering is a little on the slim side.

Physically, the Memory Key is significantly larger than the Thumbdrive, although a lot of it just seems to be protective plastic casing. This is still more sensible than carrying a fistful of floppies around.

Daniel Gardiner

Pros Good price
Native support for Windows Me/2000
Cons No native Windows 98 support
Small amount of storage space

Contact IBM
Phone 13 24 26
Online www.ibm.com
Price $99

Epson Photo 890

Printers below a certain price range tend to advertise their 'photo-quality' printing as if they were a substitute for professional photo lab printing. Generally, these printers are capable of fairly good reproduction, provided that high-quality photo paper is used, but closer examination reveals the dot pitch, and not all colours come out quite realistically. Epson's claim for the Photo 890 is that it manages to avoid this pitfall even though it costs less than $700.

It's an impressive claim, and it's backed up by quite an impressive printer. The Photo 890 is larger than most photo printers, which work on providing standard photo sizes rather than A4 printing. At first glance you could mistake it for a regular Epson printer.

As usual, no connection cables (USB or parallel) are supplied, so it's worth factoring in the cost of extra cables to the total cost. While the software setup is well explained, it took two *APC* staffers and a little lateral thinking to get the roll feeder (for printing panoramic photos) on to the back of the unit. A roll of paper is supplied, along with a measly two pieces of photo-quality paper. Most people will print at least once just to test that it works, which only leaves one piece to play around with. Photo paper isn't cheap (about $2.50 a sheet), but Epson could have done better here.

Once we did get printing, the quality and speed of the printer were exceptional for a printer at this price. It's very quiet, with only the occasional squeak to remind you that it's running. One feature Epson is keen to promote is full-page A4 photo printing, which is great for larger prints. However, we did find it a little hard to adjust some images to print properly when setting the page size to maximum this way.

Printing speed was good, with a full page taking four minutes and 50 seconds to print at maximum resolution. Print quality was also excellent, although we did find that if you combined high-resolution photographic images and text on the same print, the text ink had a tendency to weep a little, which wasn't the case with text-only printing.

As always, the market war in this particular segment comes down to Epson vs Canon, and Epson has a good chance with



the Photo 890. Comparing it to Canon's BJC 8200 (reviewed *APC* August 2000, page 44), the photo 890 is $50 cheaper and boasts a higher resolution, although it doesn't have the optional scanner head or individual ink cartridges of the Canon.

Alex Kidman

Pros Exceptional quality photo printing
Very quiet
Cons Fiddly to set up
Comes with just two sheets of photo paper

Contact Epson
Phone (02) 9903 9000
Online www.epson.com.au
Price $699

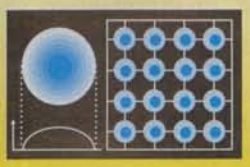
2.88 million microfine droplets per square inch. Just $649.RRP

PHOTO PRINTING with zero-graininess image quality beyond the limits of human eye-sight thanks to 2400 dpi, 4 pico-litre sized drops, 6 ink colours and 49 tonal levels.

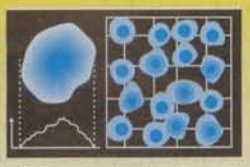
Star shaped nozzle.



High precision dot control.



S800.



Lower-level technologies.

Smaller, better ink droplets.
A unique Canon process called MicroFine Droplet Technology™ produces 4 pico-litre ink drops. Using a special star shaped nozzle each droplet is created to be centre-weighted and near perfectly round for more accurate placement.

MICROFINE DROPLET TECHNOLOGY

2400
dpi plus Microfine Droplet Technology

2400 dpi, super low density ink.
Precision placement with 2400x1200 dpi allows 2,880,000 dots per square inch using inks approximately 1/6 the density of normal inks. This gives an apparent dot size corresponding to 0.67pl of regular ink, enabling photo printing equivalent to approximately 1800 dpi.



USB

Parallel and USB interface. Both ports are built-in for Windows and Mac.

SuperPhoto mode, 49 tonal levels.
In SuperPhoto mode the S800 can print up to 42 ink droplets per pixel. This allows the printer to achieve 49 tonal levels with zero graininess, even in highlights or gradations where dots are normally distinguishable.

S800
Just $649 RRP



Extra large print heads with 6 transparent ink tanks.
There are 256 print nozzles per colour for a total of 1,536 on the print head. Separately replaceable, transparent ink tanks and a smart monitoring system help maximise operating economy.

Canon Customer Care. The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support. For more information call 1800 021 167.

3-YEAR WARRANTY OPTION

Canon

Price shown is recommended retail price including GST. Canon® is a registered trademark and Bubble Jet, MicroFine Droplet Technology and the MicroFine Droplet Technology mark are trademarks of Canon Inc. Microsoft®, Windows® and Windows NT® are registered trademarks of Microsoft Corporation in the US and other countries. Apple® Macintosh®, Mac® and Mac® OS are registered trademarks of Apple Computer Inc in the US and other countries. 1. Printer driver support is provided for Windows® 95, Windows® 98, Windows® 2000, Windows® Me, Windows NT® 4.0 for the parallel port and pre-installed Windows® 98, Windows® 2000, Windows® Me and Mac® OS 8.1+ or 9.X using the USB port. Specifications are subject to change without notice. Canon Australia Pty Ltd ACN 005 002 951. ABN 66 005 002 951. CS0810/5

Platypus Web Ecard

CD-ROMs can come in virtually any shape you want, as long as there's a circular read section for the data and your drive could conceivably fit your desired shape. For reasons of economy, there are only a few 'stock' sizes — the standard data CD and the slightly less common 7in mini CD. The latest stock size to gain widespread acceptance is the business card CD-ROM. Business card CD-ROMs are more expensive than standard business cards, but they are also a whole lot more flexible. The standard contact and company information is printed on the disc label and the content of the disc can be whatever you think is relevant.

Platypus's Web Ecard takes the business card CD-ROM concept and adds a twist — it can be updated. The CD-ROM component of the business card is used for storing large onscreen elements, primarily multimedia files, while a standard Web interface is presented for textual and layout elements which can be updated through the Web Ecard interface.

The Web Ecard package contains 48 blank business card-sized CD-Rs, a software CD, labels and card holders. The manufacturer's claim that 'no software has to be installed' is only partly true. Most of the card creation is actually done through a Web interface, but that interface only works while the software CD is in the drive. You also need suitable CD-burning software and a drive that happily accepts CDs of this size — most do. *APC* wouldn't risk the finished product in a slot-loading drive.

Card creation is done through the Web Ecard Web site, via a very simple HTML creation interface. If you've ever created a page on any of the numerous free hosts available, it will all seem very familiar. The site claims it is still in the prototype stage, so it may improve from this very basic start. The usual business card details can be added (names, phone numbers and so on), although they can't be omitted, annoyingly. If you leave the mobile phone section blank, for example, it will still print a mobile phone prefix on the card. The interface supports adding images in GIF or JPEG format, which can be laid out according to five different styles. Audio and video files can also be added, although it tends to confuse the card if you have both, as it attempts to play them at the same time.

It is worth putting all of your selected multimedia files into one directory. *APC* initially didn't, and this made the creation process harder than it needs to be.

Having laid out your card, the Web site then prompts you to download an executable to decompress with the correct directory structure for the card. From there, you simply need to burn your files, as well as the downloaded files, on to your supplied CDs. This is one area where the product help could be better; if you're not familiar with CD-burning software it could be tricky.

The use of a standard browser for card display is where the updating element comes in. Obviously, you can't burn more data to the CD, especially if your target audience only has a standard CD drive. What you can do is update the HTML content that your audience looks at. When the autorun.inf is launched, the browser presents two options: Internet or standalone versions. The standalone version simply presents the pages you've built with links to whatever content you put in at that time. The Internet version goes to a hosted page on the Ecard Web site, which should then refer back to whatever additional content you've placed on the CD. Here *APC* struck a problem. Although we could update text and layout details without any problems, the facility to point to files that were already on the CD wouldn't work properly, and we'd end up with a localised drive reference rather than an absolute file reference — which led to the content not coming up. Again, the site is said to be in prototype stage, so hopefully this will be rectified. The update feature is a neat twist on the business CD concept, although not one that someone with suitable HTML skills couldn't throw together themselves.



▲ Business card layouts can be stylish — or garish . . .



The pack sells for $199.10, which is reasonably good value. Individual business card CDs cost anywhere between $3 to $8 a pop, so $4 each isn't too bad. Web hosting is supplied for three months, after which time it will set you back $US1 per month. That's not entirely spectacular, and we suspect that the more tech-savvy users of this product will probably figure out their own hosting by the end of the three-month period. If you're not up to doing it yourself, the Web Ecard is a good, no-nonsense way to set up your own business cards containing multimedia content.

Alex Kidman

Pros Easy to use interface
Relatively inexpensive

Cons Some processes not well explained
Updated links don't always resolve properly

Contact Platypus.net.au
Phone (07) 3335 7113
Online www.web-ecard.com
Price $199.10

Portable, cordless, small and smaller. From $399.RRP

PORTABLE PRINTER CHECK LIST

IrDA for totally cordless operation.



High speed black.



Four-colour print head.



Optional colour scanner cartridge for images, fax and OCR.[4]



PhotoRealism.



Both fit into a briefcase.



WONDERFUL IDEAS FROM CANON for people needing a portable printer. Choices in size, weight and performance enhancement.

BJC™-85.
Super powerful portable printer, international adaptor standard.

It fits easily into a briefcase, but offers desktop quality and flexibility. An international power adaptor is standard and a sheet feeder is built-in. IrDA 1.1 plus parallel and USB interfaces for printing from Windows®, Windows® CE and Mac® are standard. Gold standard photographic printing via PhotoRealism™ and a long-life NiMH battery kit are available as options[2].



BJC-85
Just $399RRP

BJC™-55.
Ultra small, ultra light, including Li-ion battery.

Weighing only 900 grams, the BJC-55 is approximately ½ the size and weight of the BJC-85. Using the included battery and IrDA interface it is capable of cordless communications out of the box. An international AC power adaptor is also included.



BJC-55
Just $649RRP

High quality colour, high speed black and white.

A four colour print head with resolution up to 720 x 360 dpi comes as standard. Both printers accept an optional dedicated black ink cartridge with 128 print nozzles for print speeds up to 5 ppm.[3]

Exceptional colour optional PhotoRealism.

Using standard inks optimised for plain paper, both printers automatically print high quality images using Drop Modulation Technology™ with variable ink drop sizes. The optional PhotoRealism ™ system offers exceptional photographic printing.





Image Optimiser can "correct" low-resolution Internet images up to the printer's maximum resolution.

3-YEAR WARRANTY OPTION

Canon Customer Care.
The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support. For more information call 1800 021 167.

Canon

Price shown is recommended retail price including GST. Canon® is a registered trademark and Bubble Jet, BJC, PhotoRealism and Drop Modulation Technology, are trademarks of Canon Inc. Microsoft®, Windows® and Windows NT® are registered trademarks of Microsoft Corporation in the US and other countries. Apple®, Macintosh®, Mac® and Mac® OS are registered trademarks of Apple Computer Inc in the US and other countries. All other trademarks are the property of their respective owners. 1. Battery optional for BJC-85. 2. USB interface can only be guaranteed with pre-installed Windows® 98, Windows® 2000, Windows® Me and Mac® OS 8.1+ or 9.X. 3. Print speed may vary by content of the document and processing speed of the host computer. 4. Fax and OCR require user-supplied software. Specifications are subject to change without notice. Canon Australia Pty Ltd ACN 005 002 951. ABN 66 005 002 951. C50808

Acer PalmPro 7765PE



The Acer PalmPro 7765PE is a lightweight projector designed for travellers. The unit measures 6.2 by 24.3 by 19.8cm and weighs only 2.3kg, which is small enough to fit into most carry cases. The projector uses digital light projection (DLP) technology, utilising hundreds of thousands of tiny mirrors to reflect and throw a digital image. DLP proponents claim that it not only offers a crisper picture than LCD, but also a brighter image.

The PalmPro 7765PE projects at 800 ansi lumens, which is bright enough for display in a lit room, but obviously dimming the lighting gives a clearer image. The lamp has a focus ring and zoom to adjust the projected image size, which ranges from a minimum of 60cm diagonal projected from 1.5m, to 2.7m diagonal projected over a 5m range.

The projector has control keys to adjust the quality of the projected image, such as keystone correction, brightness, contrast and image size/placement. The menu is easy to navigate with the keys on the projector, but with some of the test images the brightness and contrast had to be put on maximum to achieve good sharpness and clarity.

It's promoted as both a business projector for presentations and a home projector for multimedia, and *APC* found the unit competent at both. Featuring VGA, composite and S-Video display inputs, the projector was great for all purposes, particularly DVD projection. There are also audio inputs and outputs for external speakers, as well as a volume control.

The projector can handle resolutions of up to 1,204 by 768 XGA, and also features a handy i-zoom function that lets you zoom up to 32x magnification into any part of the image. Unlike many mini projectors, the PalmPro 7765PE worked very quietly and didn't generate a lot of heat.

The unit also comes with a remote mouse/pointer which has become a standard inclusion for business projectors. The pointer with the PalmPro 7765PE is comfortable to hold, and the buttons are easy to manipulate with one hand, but the laser pointer is a little small. The remote also allows for freeze-frame control of presentations or video feeds.

If you frequently travel overseas, you would find the auto-switching power supply indispensable, as it can toggle automatically from 100-120 to 200-240 AC, depending on the power source into which it is plugged. A soft carry case is included that has enough room for the supplied cords, cables and extras.

Darren Ellis

Pros Lightweight
Quiet running
Cons Small laser pointer

Contact Acer Communications and Multimedia
Phone (02) 8762 3350
Online www.acercm.com.au
Price $8,499

Microsoft SideWinder Force Feedback 2

The original SideWinder Force Feedback had many gamers intrigued. It looked neat and played well, and the forces involved were indeed as mighty as the advertising suggested. At $300, they really needed to be. A few years on, Microsoft has released the Force Feedback 2 at a much healthier price.

If you're planning to buy a Force Feedback 2 after this review, make sure you actually *get* the Force Feedback 2 and not the almost identical Precision Pro 2. The two sticks use almost exactly the same plastic moulding, presumably as a cost-cutting measure; the only main difference is a tiny green light on the base.



When *APC* reviewed the Precision Pro 2, we liked it a lot, and many of its best features have been passed on to the Force Feedback 2. It has the same good stick response, logical button layout and quality construction. We're wary of the throttle, which still feels a little weak.

It would be hard to install the Force Feedback 2 incorrectly. A huge green sticker is placed over the USB cable, telling you to install the software first. That done, *APC* set out to test the range of feedback options. Like the original, the Force Feedback 2 has a huge range of responses, from quite slow and subtle resistance, to whacking great shocks. The design of the new casing makes the Force Feedback 2 lighter, which means it tends to jump around a bit more on stronger shocks and makes more noise. The rest of the *APC* staff could certainly tell when the Force Feedback 2 was being tested.

The strength of available forces has also increased. This means that it's vital to adjust the feedback according to the game you're playing. Like most typical gamers, *APC* headed in with the reckless idea of setting everything to maximum. Ten minutes later we were considering RSI cures — the forces are *that* strong. A little adjustment (and some rest) and we were back on track.

The SideWinder Force Feedback 2 is a high-quality joystick with excellent response and some truly scary levels of force feedback. It's a good choice as long as you don't actually snap your wrists with it.

Alex Kidman

Pros Powerful force feedback
Good button layout
Cons Weak throttle
Forces may be too powerful

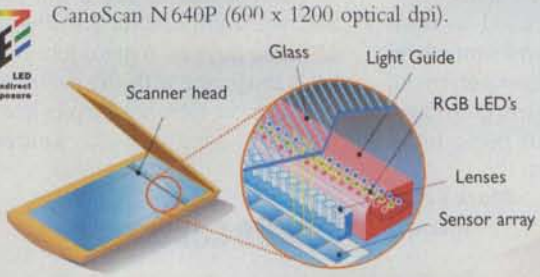
Contact Microsoft
Phone 13 20 58
Online www.microsoft.com/sidewinder
Price $199

It's not *just* a scanner, it's a Canon for only $119.[RRP]

SLEEK, SIMPLE TO USE scanners with patented LIDE Technology, pass-through parallel connection and full software suite.

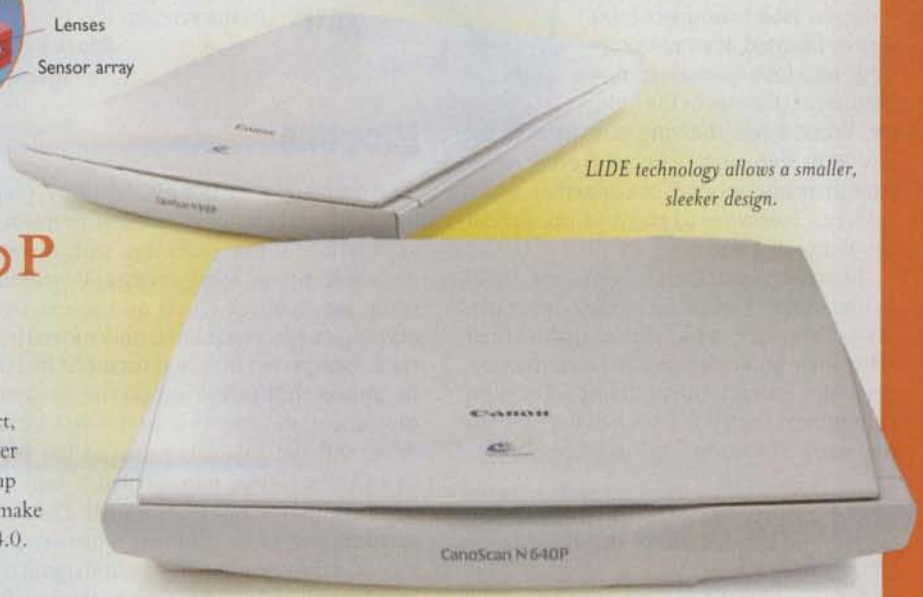
Introducing LIDE.™

LIDE (LED Indirect Exposure) fundamentally changes the way scanners work, and their price/performance ratio. LIDE eliminates the need for costly, complex optical mirrors, while it maintains image quality and colour clarity in two super slim, sleek scanners. The CanoScan N340P (300 x 600 optical dpi) and CanoScan N640P (600 x 1200 optical dpi).





Easy to use.
The ScanGear Toolbox (pictured above) lets you select functions and the final destination of your scan such as printer, e-mail program, fax, copy or others,[1] and automatically makes settings for you.



LIDE technology allows a smaller, sleeker design.

300 x 600 dpi

CanoScan N 340P

Just $119[RRP]

Getting started is remarkably easy.
Your scanner plugs directly into the parallel port, or hooks up as the middle link between a printer and your PC. Quick-and-easy CanoScan™ Setup installs the included software, and you're ready to make your first scan with Windows 95/98/2000/NT 4.0.

Full software suite, 42-bit colour input.

The CanoCraft CS-P software works for both stand-alone image acquisition, and as a TWAIN driver for other applications. Advanced controls for colour matching and image definition allows various pre-scan settings such as selecting the scan area and adjusting resolution up to 9600 dpi[2] with up to 42-bit colour input. The software package also includes ArcSoft PhotoStudio 2000 for photo-editing and Caere OmniPage Pro for converting scanned documents into editable text data, plus a CD ROM with user's manual.



CanoCraft makes high quality colour easy.

42 bit input

600 x 1200 dpi

CanoScan N 640P

Just $149[RRP]

Canon Customer Care. The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support. For more information call 1800 021 167.

3 YEAR WARRANTY OPTION

Canon

Price shown is recommended retail price including GST. Canon® and the Canon logo are registered trademarks and CanoScan and LIDE are trademarks of Canon Inc. Microsoft®, Windows® and Windows NT® are registered trademarks of Microsoft Corporation in the US and in other countries. All other trademarks are the property of their respective owners. 1. Fax and e-mail software are not supplied by Canon. 2. Enhanced resolution dependent on driver and software used. Specifications subject to change without notice. Canon Australia Pty Ltd ACN 005 002 951. ABN 66 005 002 951. CS0084

IT by degrees

We welcome comments and suggestions. Send correspondence to **APC Readers' Say, PO Box 37, Sydney NSW 1028**, or email **apc@acptech.net**. Letters can also be submitted online at **apcmag.com**. All correspondence becomes the property of *APC* and is subject to editing.

Speaking from experience

I was interested to read about other readers' difficulties finding work in the IT industry (see *APC* February and March, page 40).

It seems that employers are looking for people with a recent degree and recent commercial experience. This is difficult to achieve, and I'm now sceptical about the value of a degree.



I have been working as a Unix C (not C++) programmer for about 13 years. I have little Web, database or OO experience and I do not have a degree. Had I completed the degree I started, it would probably be close to useless now because of changes in the industry. When I was studying part time in the late '80s, the course changed every year. Now there are reports of overseas fee-paying students' marks being bumped up, further devaluing degrees.

In my experience, employers expect staff to undertake IT training in their own time. They don't want to pay staff to update their skills then go elsewhere for better money. Even the Federal Government's Training Guarantee Levy trialled back in the late '80s and early '90s was a flop.

IT managers' short-sightedness is the reason the IT industry is suffering. Perhaps I've just had bad experiences (and I apologise to those firms that do look after their staff), but if this shortage exists, it is the fault of the employers. I'm basically self-educated in IT, and am attempting to continue educating myself, but I will have a difficult time gaining employment without commercial experience in new areas.

Maybe we need to form some sort of semicommercial club where inexperienced programmers can gain experience without going broke in the process.

Mark Keehn
Internet

Letter of the month



Want to win a copy of Microsoft Office 2000 Premium?

The most interesting letter sent in during the month of April will win its writer a free copy of the world's most popular personal productivity tools, including copies of Microsoft Office 2000, Visio 2000 Professional and Project 2000. The total value of these packages is $3,102. The winner of this fantastic prize will be published in *APC* June. This month's winner is Mark Keehn.

Mice one

Your article on mice (see *APC* February, page 92) reminded me of a baffling problem I experienced a few years ago with a common ball mouse. Every evening I'd use the computer to check email and so on. One evening, the mouse pointer only moved left-right. I suspected fluff had accumulated on the rollers that picked up on the up-down movement, so I switched on the desk lamp, broke out the tool kit, removed the ball, cleaned the rollers, reassembled it, and the up-down movement was restored. The next evening, the same problem returned, so I repeated the cleaning process and again the mouse worked fine. Same on the third night.

On the fourth night, I started to doubt that fluff was managing to build up every 24 hours, so I started thinking. A little experimentation confirmed that what was really fixing my recalcitrant mouse was not the cleaning, but switching on the desk lamp. Presumably, the mouse had blown the internal LED that shines through the toothed wheel to the up-down phototransistor pickup. When the desk lamp was switched on there was just enough light creeping through the space between the buttons to provide the clocking, and restore the mouse to a working state.

By the way, I live in the US, and despite all the magazines available over here, I subscribe to yours — you hit just the right note on technical and general interest topics.

Eric Kiem
Internet

A++

I've learned a lot from your C++ tutorial series, and have gone on to learn more about the language and such things as Windows and OpenGL programming. I even use a compiler from your magazine. I've started getting into the game dev scene. I am only a beginner, but I have already written a game. I learned the ASP I used on my Web page from your tutorials as well.

I would like to say a big hats off to Michael Smith and all the other people at *APC*; you guys do a great job! It is good to see a magazine with the determination to give us more advanced topics like C++.

Andrew Russell
Internet

Mobile costs

As Suzanne Fraser says in 'In transit' (*APC* February, page 63), young people think mobile phones are 'cool'. They think everyone should have one. However, the 'coolness' is diminished as soon as the first bill comes in. The focus is then on how to pay it.

I'm a young person who no longer feels mobile phones are cool. I don't believe young teens need one. I have found mobile phone contracts very difficult to understand, and I have been misled about aspects of my contract. I agree that mobile phone companies should provide information in contracts about the total costs of the deal and about other issues that affect everyone signing a mobile phone contract. Without this information, many young people will continue to become stuck (as I am) with a contract and payments to make.

Samuel Koh
Internet

Conditions of entry

These conditions apply to all competitions in *APC* April, unless specific conditions are provided with the competition. Instructions on 'How to Enter' form part of the Conditions of Entry of all competitions in *APC* April. Entry is free and open to all residents of Australia other than employees of ACP Publishing Pty Ltd (ACN 053 273 546), suppliers of competition prizes, their families and associated agencies. The contests close last mail March 20. Enter according to the instructions supplied with the individual competitions. The judges' decision is final and no correspondence will be entered into. No responsibility is accepted for late, lost or misdirected entries. All entries become the property of ACP Publishing Pty Limited, the promoter, 54 Park Street, Sydney NSW 1028. The prizes are not transferable or redeemable for cash. Any change in the value of the prizes occurring between the publishing date and the date the prizes are claimed is not the responsibility of the promoter. Winners will be notified and their names will be published on **apcmag.com**.

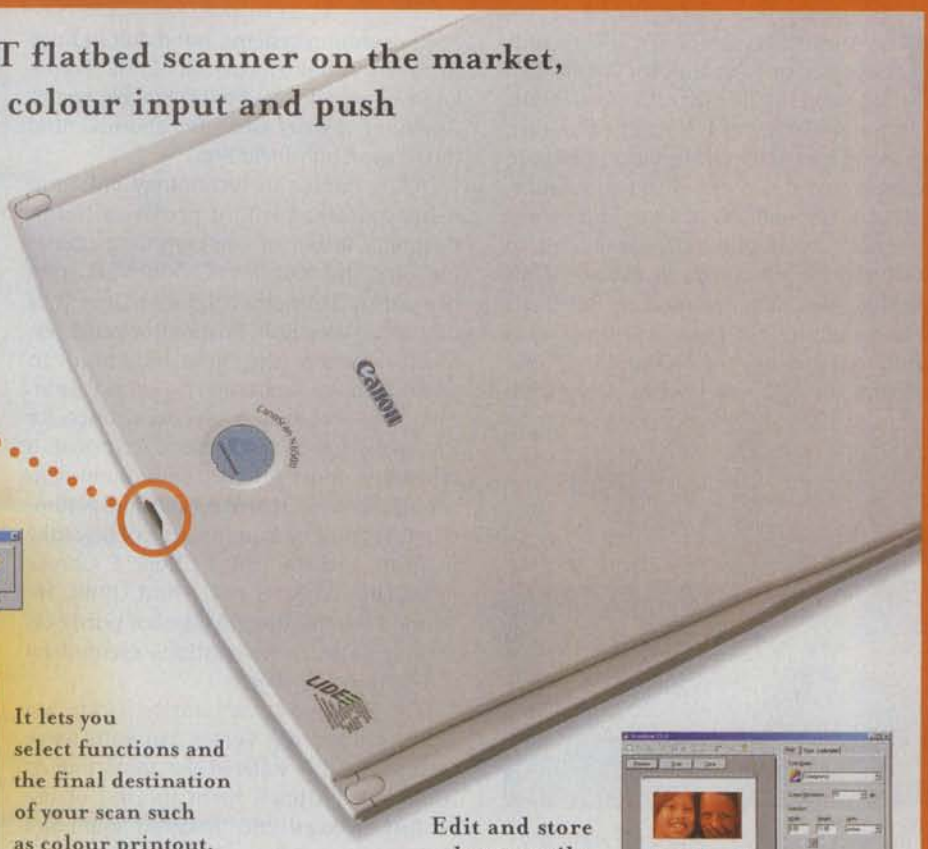
Plug and play USB, push button simplicity 600 x 1200 dpi, just $189.[RRP]

THE MOST COMPACT flatbed scanner on the market, 600 x 1200 dpi, 42-bit colour input and push button simplicity.

Push button simplicity, unconventionally silent.
A one touch scan button activates ScanGear Toolbox CS (the scanner control software).



It lets you select functions and the final destination of your scan such as colour printout, e-mail program, fax, copy or others,[1] and makes the necessary settings for you.



Edit and store photos easily.
ArcSoft PhotoStudio 2000 is an easy to use image editor, and ArcSoft PhotoBase creates photo databases. Adobe Acrobat Reader and PDF manuals for Windows and Mac are included.

High powered scanning with LIDE.
Patented LIDE™ technology delivers optical resolution up to 600 x 1200 dpi with 42-bit colour input. ScanGear CS offers direct scanner control and is a universal TWAIN driver for other applications. *It lets you make pre-scan settings such as selecting the scan area and adjusting resolution up to 9600 dpi.*[2]

LIDE LED Indirect Exposure



CanoScan™ N 650U
Just $189[RRP]

Plug 'n play USB for Windows and Mac.
The USB interface is compatible with Windows 98/2000 and Mac OS 8.5 or higher[3]. It lets you plug in or disconnect your scanner without having to turn off your computer first. And, because the scanner is powered directly through the USB cable, it does not need a separate AC cable.

USB



42 bit input

"Z-lid", advanced OCR.
This special lid simplifies book scanning and OCR with the bundled Caere OmniPage Pro[4] converting scanned text into editable data.

Canon Customer Care. The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support. For more information call 1800 021 167.

3-YEAR WARRANTY OPTION

Canon

Price shown is recommended retail price including GST. Canon® and the Canon logo are registered trademarks and CanoScan and LIDE are trademarks of Canon Inc. Microsoft®and Windows® are registered trademarks of Microsoft Corporation in the US and in other countries. Apple®, Macintosh®, Mac® and Mac OS® are registered trademarks of Apple Computer Inc in the US and other countries. All other trademarks are the property of their respective owners. 1. Fax and e-mail software are not supplied by Canon. 2. Enhanced resolution dependent on driver and software used. 3. USB interface can only be guaranteed with pre-installed Windows 98/2000 or Mac OS 8.5 or higher, scanner does not include parallel port connection. 4. Includes OmniPage SE for Mac. Specifications are subject to change without notice. Canon Australia Pty Ltd ACN 005 002 951. ABN 66 005 002 951. CS0085

Fifteen years ago, APC paid homage to the latest crop of rising IT entrepreneurs

High-tech heroes

The April 1986 issue of *APC* covered Bill Gates's visit to Sydney for Australia's pre-eminent PC fair, the Australian Computer Society's PC86. Even before Windows had achieved its current plague proportions, the main thing that interested *APC* about Bill Gates was his money.

Gates's visionary homily about the CD-ROM was skimmed over in favour of his bank balance. "On first meeting Bill Gates of Microsoft, it's hard to believe the guy is worth in the vicinity of $300 million," one unidentified *APC* writer wrote. Only $300 million? Considering the man is now worth about $US70 billion, that *is* hard to believe.



▲ Bill Gates on CD-ROM: "That could allow us to build a home computer that actually has some relevance to a lot of people."

In his early days, Gates inspired only ridicule from *APC*. "As he prances around his hotel room high above Sydney Harbour, espousing the virtues of CD-ROM and Microsoft's recent public float, the impression is more of an excited kid fresh out of high school rather than an established high-tech hero," wrote *APC*, accusing Gates of looking like a "13-year-old computer nerd".

Gates played second fiddle to visiting Apple CEO John Sculley, who easily claimed number one billing for PC86. Local PC maker Microbee even managed to overshadow Microsoft at the trade fair.

Sculley was hot property in the IT press after ousting Steve Jobs from the top job at Apple the year before. Sculley was keen to promote the virtues of open operating systems, but didn't indulge in much visionary rhetoric. Little did he know he was doomed to an ignoble end at Apple seven years later after championing the Newton handheld flop.



▲ Who am I? The biggest man in IT in Australia.

APC's parade of technology entrepreneurs continued with a profile of Nolan Bushnell, father of the computer games industry and founder of ill-fated PC pioneer Atari. Formerly a boss to Steve Jobs and Steve Wozniak, Bushnell was desperate to promote the 'next big thing' in entertainment technology — the Petster. The robot pet was a second chance for Bushnell after the collapse of Androbot, a scheme to mass produce humanoid consumer robots. Bushnell established Androbot using money from the sale of his stake in Atari and the failed Chuck E Cheese Pizza Time Theatre restaurant chain. He blamed the failure of Androbot partly on the unrealistic expectations created by C3PO from *Star Wars*.

The Petster was similar to Tickle Me Elmo or Bouncing Tigger, but with fewer features, and it suffered the same fate as Androbot. Bushnell spent the rest of the century in legal and financial squabbles with investment house Merrill Lynch.

Jodee Rich, the current head of One.Tel, also made an appearance in *APC*'s April 1986 issue as the managing director of Imagineering — a doomed local IT startup. Last year, the reclusive Rich enraged the business community by awarding himself a $US4.5 million bonus at the same time that One.Tel posted a $300 million loss.

Rich's reclusiveness was evident back in 1986 in his reluctance to speak to the media. In response to a fracas about software piracy, Rich had an underling write a reply to *APC*. He set up Imagineering Technology as an IT distributor when he was fresh out of university. After just four years, Imagineering struck financial troubles and Rich sold out to Hong Kong company First Pacific. He resurfaced with a bang in 1994, raising millions from Kerry Packer and Rupert Murdoch to set up One.Tel.

In spite of the emphasis on 'high-tech heroes', *APC*'s real stars were the latest technological advances. The latest products available to Australian PC users had little in common with the often incongruous and irrelevant ideas espoused by the technology visionaries of the '80s. People just wanted PCs that were less complicated and more powerful.



▲ The robot pet: Ill-fated Atari founder Nolan Bushnell said, "It is not expected to do anything worthwhile."

Even in 1986, the Unix PC seemed cursed to be forever praised but never used. *APC* originally pronounced the Unix PC from Olivetti and AT&T "the best thing since sliced bread", but after a closer look, criticised the awkward design — the box was "shaped like a large wedge of cheese". The $10,000 price tag, obscure keystroke command system and eight dictionary-sized manuals didn't help.

The other star was the mouse. *APC* devised a competition between a mouse and a keyboard to discover which was more efficient. The keyboard proved to be faster, but the exercise uncovered an important insight into the human psyche. "The mouse requires less concentration, but then, it's human nature to go for the easier option . . ."

Fiona Angus

How to use a mouse : "You move the pointer across the screen by rolling the mouse around the table; with a combination of button-clicks and logical movements you highlight the required character, word, paragraph or chunk of text. You then move the pointer to the command menu, click on the appropriate word — Delete, Copy, Format and so on — and the highlighted text is dealt with accordingly."

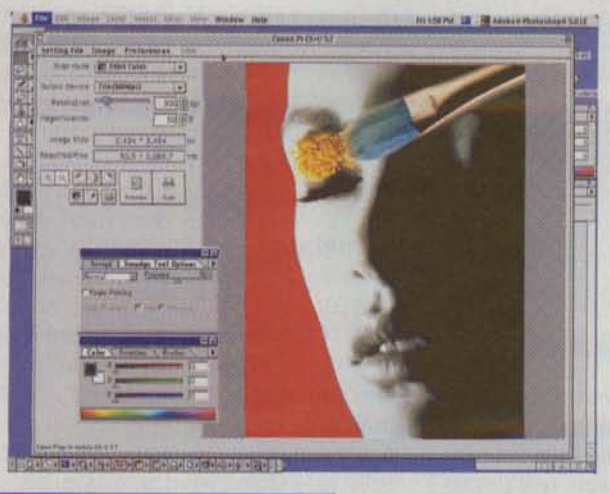
Super high resolution in a *super sexy* scanner, just $299.[RRP]

SCANNER BREAKTHROUGH. 1200 x 2400 dpi, 42-bit colour input and LIDE technology in an ultra compact case.

42 bit input

Semi-professional scanning with LIDE.
Canon's patented LIDE™ was a flatbed scanning breakthrough that changed the price/performance ratio while maintaining image quality and colour clarity. The CanoScan™ N 1220U, with 1200 x 2400 optical dpi and 42-bit colour input, demonstrates the evolution of this technology, delivering "semi professional" quality in a super slim, super sexy looking case.





Simple, professional quality software.
The one-touch scan button activates ScanGear Toolbox CS to select functions and the destination of your scan such as colour print out, e-mail program, fax, copy or others,[1] and makes the necessary settings for you. ScanGear CS offers direct control for pre-scan settings such as selecting the scan area and adjusting resolution up to 9600dpi.[2] It is also a universal TWAIN driver for applications such as the bundled Adobe Photoshop LE, a limited edition of the world's most popular image editor.



CanoScan N 1220U

Just $299[RRP]



Edit and store photos easily.
ArcSoft PhotoBase creates electronic photo albums. Arc Soft PhotoStudio allows easy image editing.



"Z-lid", advanced OCR.
This special lid simplifies book scanning for OCR with bundled Caere OmniPage Pro[4] to convert scanned text into editable data.

Plug 'n play USB for Windows and Mac.
The USB interface lets you plug in or disconnect your scanner at any time without having to turn off your computer first.[3] And, because it is powered through the USB cable, the scanner does not require an AC cable.

3-YEAR WARRANTY OPTION

Canon Customer Care.
The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support. For more information call 1800 021 167.

Canon

Prices shown is recommended retail price including GST. Canon® and the Canon logo are registered trademarks and CanoScan and LIDE are trademarks of Canon Inc. Microsoft® and Windows® are registered trademarks of Microsoft Corporation in the US and in other countries. Apple®, Macintosh®, Mac® and Mac OS® are registered trademarks of Apple Computer Inc in the US and countries. All other trademarks are the property of their respective owners. 1. Fax and e-mail software are not supplied by Canon. 2. Enhanced resolution dependent on driver and software used. 3. USB interface can only be guaranteed with pre-installed Windows 98/2000 or Mac OS 8.5 or higher. scanner does not include parallel port connection. 4. Includes OmniPage SE for Mac. Specifications subject to change without notice. Canon Australia Pty Ltd ACN 008 002 951, ABN 66 008 002 951.

CS980859

How do we protect our privacy in the electronic communication age?

Amending privacy



Jeremy Horey

Jeremy Horey is a senior consultant with Com Tech. He can be contacted at jhorey@ozemail.com.au.

The views expressed in this column do not necessarily reflect the views of Com Tech.

Who did you ring up last week? How long did you talk to them? Is it any of my business?

The police can easily find the answers to the first two questions without thinking about the third. Australian telephone companies gave out nearly a million such items of information last year and are likely to provide even more this year. The police do not need a warrant or any special authorisation; they just need to convince the phone company that the information will help with their inquiry. However, the content of telephone conversations is protected. Police require search warrants to listen to conversations.

So what about other forms of long-distance communication? The content of emails may be protected in the same way as phone calls. However, the position is not yet entirely clear, and the logs that record who you sent messages to and when you sent them are as open as telephone records.

> Australians have been happy to allow politicians to legislate our rights away.

It is tempting to see the failure of the Federal Government to create real protection for Australians' privacy as just another symptom of its lack of concern. Attempts to achieve a balance between our rights as private citizens and the desires of large companies to make money by violating our privacy is one reason that the government has done such a poor job.

However, there are others. Australians have never taken the idea of rights very seriously. We don't have a constitution that protects and reminds us of our rights. Our constitution is about how we can have our freedom limited by government; it is about our right to be governed. Moves to create a bill of rights for Australia have had little success.

We live under one of the most restrictive libel regimes in the world, which is an effective way of censoring free speech. There are plenty of similar examples that demonstrate how Australians are happy to allow politicians to legislate our rights away.

Another reason for our lax privacy regime is that lobby groups have been very successful in convincing politicians that too much privacy will hamper the development of the online economy. Powerful business and media interests see considerable profit in direct marketing to Australians using the information collected from a variety of businesses, including Web sites.

Take the time to read the privacy principles from the amended act. Statements such as "It is impracticable for the organisation to seek the individual's consent before that particular use" allow direct marketers to use information without consent.

There are some safeguards. For example, direct marketers must provide people with the ability to opt out. However, these safeguards are no more than the standard code of practice adopted by the direct marketing association. If any Australians do challenge companies under this act, the courts are going to have some difficulty in deciding what is 'reasonable' and what is not.

Our privacy is more important than ever. Email and Web sites are new ways for companies and institutions to find out what we do and what we think, and new forms of electronic communication, such as SMS, keep developing.

Electronic communication is much easier to monitor than older forms. The more we use these services, the more privacy we lose. If we don't want to live with a constant bombardment of advertising or have state organisations watching our every move, we need to take our privacy seriously.

We need laws that really protect our rights, and to remove politicians who are not prepared to protect them. It's possible to have privacy protection *and* a flourishing online economy. We need only look to Europe for an example of how it's done.

Combined print *and* film scanner with USB, *surprisingly low* $299.[RRP]

BUILT-IN FILM SCANNING up to 1200 x 1200 dpi plus high quality photo scanning in an easy to use scanner.

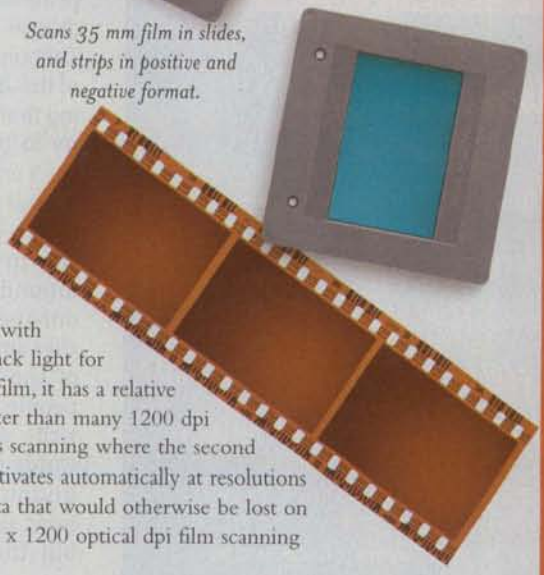


Easy to use print and film scanner with USB.
The CanoScan™ D660U solves diverse scanning needs simply. No adapters or add-on kits. Everything is built-in, and is available with the push of a button, one for photos, and one for 35 mm positive or negative film in either slide or roll format. For beginner controls, ScanGear Toolbox lets you select functions and the final destination of your scan such as *printer, e-mail program,* fax, copy or others.[1] Or, direct driver control lets you adjust scan size, resolution, and other parameters. The USB interface connects to either Windows 98/2000 or Mac OS systems.[2]





Scans 35 mm film in slides, and strips in positive and negative format.



Superior 35 mm film scanning with VAROS.™
Continuous tone colours in film pose challenges. Canon solves them with innovative VAROS technology. The scanner cover includes a built-in back light for film that reaches an extra large CCD sensor. Much like high-speed film, it has a relative light sensitivity up to 4 times greater than many 1200 dpi CCDs. Then VAROS uses two-pass scanning where the second pass is refracted by half a pixel. It activates automatically at resolutions greater than 600 dpi, capturing data that would otherwise be lost on a lesser scanner. The result is 1200 x 1200 optical dpi film scanning in less space and lower cost.





Edit and store photos easily.
ArcSoft PhotoStudio 2000 provides tools for editing photos, and ArcSoft PhotoBase creates an electronic photo database. Also included are Caere OmniPage Pro for OCR[3] (optical character recognition), plus Adobe Acrobat Reader and PDF manuals for Windows and Mac.

CanoScan D 660U

Just $299[RRP]

3-YEAR WARRANTY OPTION

Canon Customer Care.
The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support. For more information call 1800 021 167.

42 bit input

Advanced photo scanning and colour capture.
Photo print and text scanning resolution goes up to 600 x 1200 optical dpi with 42-bit colour input capable of capturing more than 4 trillion colours. Data can even be software enhanced to 9600 dpi.[4]

Canon

Price shown is recommended retail price including GST. Canon® and the Canon logo are registered trademarks and CanoScan and VAROS are trademarks of Canon Inc. Microsoft® and Windows® are registered trademarks of Microsoft Corporation in the US and in other countries. Apple,® Macintosh,® Mac® and Mac OS® are registered trademarks of Apple Computer Inc in the US and other countries. All other trademarks are the property of their respective owners. 1. Fax and e-mail software are not supplied by Canon. 2. USB interface can only be guaranteed with pre-installed Windows 98/2000 or Mac OS 8.5 or higher, scanner does not include parallel port connection. 3. OmniPage SE edition for Mac. 4. Enhanced resolution dependent on driver and software used. Specifications subject to change without notice. Canon Australia Pty Ltd ACN 005 002 951. ABN 66 005 002 951. C59808/10

Have you ever wondered whether forwarding email petitions achieves anything?

Forward thinking



Gabrielle Kuiper

Gabrielle Kuiper rides her bike everywhere and works across the science/policy, human/environment, oral/written, advocate/academic and paper/electronic divides in the hope of contributing to positive social change. She can be contacted at Gabrielle.Kuiper@uts.edu.au.

At least once a week, I receive an email petition in my mailbox and debate with myself about how to reply. The petitions vie for my attention on issues as diverse as the treatment of women under Taliban rule in Afghanistan and the axing of the ABC's *Quantum* program. It's inspiring that so many people are using email to try to bring about social change, but we can't assume that it will happen more easily and quickly because of new technology.

It's easy to forget that even though the printing press was invented in around 1440 AD, universal literacy has only become the norm in Western countries since World War II. About a billion of the world's 6 billion people still can't read or write more than a few words. Mass literacy has undoubtedly changed how societies operate, but the written word's power to liberate depends not only on technology but also on social and economic factors such as access to education and cheap means of production.

We can't assume that social change will happen more easily and quickly because of new technology.

It is supposedly common knowledge that with writing comes emancipation and democracy. However, totalitarian regimes have prospered in largely literate nations. Hitler's *Mein Kampf* was a best-seller in Germany in the 1930s. Humans have a complex relationship with the technology they create and use. For example, one of the first communication technologies, the word, has been used as the basic element in love poems, racist speeches and instructions on how to build a Molotov cocktail.

Advocates for the Net argue that it is inherently democratic because of its decentralised networks and the relatively low cost of production. A Web site doesn't require the huge capital investment that a TV station does. However, a Web site or an email can't bring about social change by itself, any more than a TV or radio station can.

We need to remember that the same care and thoughtfulness that is used in traditional forms of social change action needs to be applied to our electronic communication. Without that, its effectiveness for social change will be compromised. Politicians will ignore emails, newspapers will cease reporting on subversive Web sites and we will all suffer 'compassion fatigue' from the sheer volume of electronic information vying for attention.

So my reply to email petitions usually goes something like this:

Thanks for the email. Over the years I have developed some personal guidelines for forwarding email petitions. They are roughly as follows.

1) It has to have a date.

2) It has to include the name of the organisation responsible.

3) It has to include the URL of a Web site where I can go and verify the details.

This petition has none of the above, and despite the highly worthy nature of the cause, without these things it is unlikely to be much other than a pleasant form of spam ;)

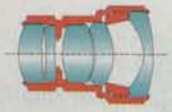
The problem with many email petitions is that they spawn countless copies and often flood the person they're addressed to. It's unlikely that the politicians/industry CEOs/military dictators will ever see them.

IMHO, it is much more effective to email politicians directly (for address details see www.aph.gov.au), write a letter to a newspaper or other publication (for example, the Sydney Morning Herald's *letters@smh.fairfax.com.au), or join a community group or non-government organisation to work with other people to bring about change.*

Despite the hype, Net activism isn't easy; it means hard work, thoughtfulness, creativity and considered dialogue — just like all work for social change.

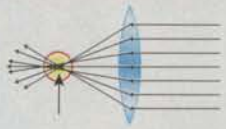
Exceptional quality *for* graphics, design *and* web work, *just* $499.[RRP]

ADVANCED CCD, 1200 x 2400 optical dpi, fast Galileo Lens, full 42-bit colour and optional high intensity film adaptor unit.

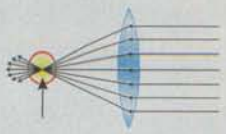


Galileo Aspherical lens.

High-speed Galileo Lens, advanced CCD, more optically accurate.
Superior performance begins with Canon's optical expertise. The five-element, aspherical lens system eliminates distortion. A shortened optical path and wide aperture lens (f-stop=5.5) increase scanning speed and improve signal to noise for a more optically accurate system. A true 1200 dpi CCD sensor is capable of finer detail and more accurate colour than "hit or miss" interleaved CCD approaches used by some competitors.



Spherical aberration – Light converges at different points.



Galileo Lens – Light converges at a single point.

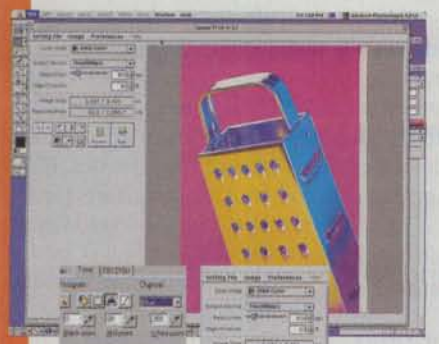


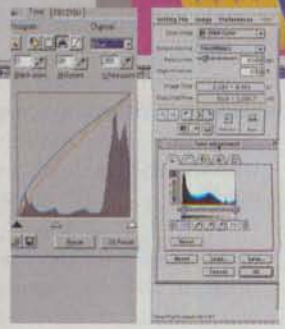
ScanGear Toolbox CS offers "point and click" simplicity.

So advanced, so simple.
The easy to use unit delivers studio quality 1200 x 2400 dpi optical resolution for almost the same price as many 600 dpi scanners. The USB interface connects to Windows 98/2000 and Mac OS systems.[1]

Optional FAU-S11 film adaptor,[2] $199.[RRP]

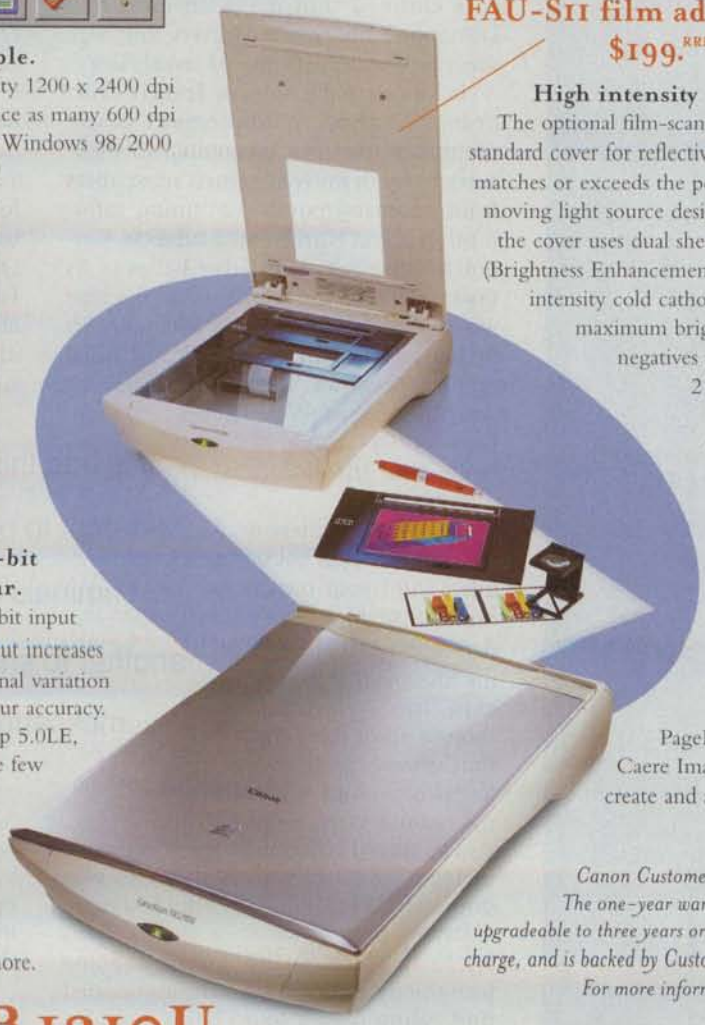
High intensity film adaptor.
The optional film-scanning unit replaces the standard cover for reflective and film scanning, and matches or exceeds the performance of expensive moving light source designs. The light source in the cover uses dual sheets of 3M™ BEF film (Brightness Enhancement Film) plus dual, high-intensity cold cathode fluorescent lamps for maximum brightness. It accepts colour negatives and positives in 35 mm, 2¼" and 5 x 4" sizes.





Full 42-bit colour.
True 42-bit input *and* output increases subtle tonal variation and colour accuracy. Photoshop 5.0LE, one of the few applications capable of handling 42-bit colour, is included. Advanced controls cover gamma settings, histogram adjustment, colour curves and more.

42 bit input/output



Full software suite.
ScanGear control software, a universal TWAIN driver and Photoshop LE are included for Windows and Mac. Caere OmniPage LE for OCR is included for Windows. Caere PageKeeper for Windows and Caere ImageAXS for Macintosh create and access visual data bases.

Canon Customer Care. The one-year warranty is upgradeable to three years or a minimal charge, and is backed by Customer Care hot-line support. For more information call 1800 021 167.

3-YEAR WARRANTY OPTION

CanoScan™ FB 1210U

Just $499[RRP]

Canon

Price shown is recommended retail price including GST. Canon® and the Canon logo are registered trademarks and CanoScan is a trademark of Canon Inc. Microsoft® and Windows® are registered trademarks of Microsoft Corporation in the US and in other countries. Apple®, Macintosh®, Mac® and Mac OS® are registered trademarks of Apple Computer Inc in the US and other countries. All other trademarks are the property of their respective owners. 1. USB interface can only be guaranteed with pre-installed Windows 98/2000 or Mac OS 8.5 or higher, scanner does not include parallel port connection. 2. Optional FAU-S11 does not include shiny metallic cover. Specifications are subject to change without notice. Canon Australia Pty Ltd ACN 005 002 951. ABN 66 005 002 951. CS9808/11

Court rulings are challenging the notion that the Net is free of territorial boundaries.

Who rules cyberspace?



Leif Gamertsfelder

Leif Gamertsfelder is a member of Deacon's digital industries group and specialises in Internet-related legal issues. He can be contacted at leif.gamertsfelder@deaconslaw.com.au.

This article is intended to provide a general summary only and should not be regarded as a substitute for legal advice.

Several foreign courts have recently proven that their influence extends well beyond their physical jurisdictions and into cyberspace. An Italian court has ruled that foreign-based Internet sites that contravene Italian law can be shut down if they contain defamatory material. The Web sites involved in the case claimed that a Jewish man had kidnapped his two daughters and was raising them in defiance of Jewish law.

In another decision, a French court ordered Yahoo to implement costly administrative and technological measures to try to prevent French subscribers from accessing pages containing information about Nazi-related subjects. Germany's highest court also believes its laws extend to the whole world in cases where foreign citizens use Web sites in breach of German law. The court ruled against Frederick Töben, who used his Australia-based Web site to encourage people in the belief that the Holocaust didn't happen.

The message these decisions send is that countries other than your own may have jurisdiction over your acts if you post material on the Internet that breaks foreign laws. What is common to all of these cases is that citizens could connect to the offending sites from their home countries.

The initial reaction to these decisions in legal and technological circles was disbelief. US legal experts attacked these decisions because of their implications for free speech in that country. Some technology experts were dumbfounded that ruling judges could be so ignorant of Internet technology and of the fact that their judgments would be almost impossible to enforce.

Most importantly, the rulings are aimed at the wrong people. It is one thing to attempt to punish criminals and quite another to shoot the messenger. If alleged wrongdoers can be identified and live abroad, extradition processes should be commenced. Hapless ISPs should not be used as proxy criminals where offenders can't be traced or brought to justice.

Decisions aimed at ISPs such as Yahoo are tolerable if the service provider is simply forced to take reasonable steps to ensure compliance with the law. In Yahoo's case, the French decision might have been reasonable if Yahoo was only forced to take down offending material hosted on French servers. By forcing Yahoo to take down material hosted on foreign servers, block IP addresses and take other technological steps to stop French citizens gaining access to sites, the French court set a dangerous precedent. It effectively said that Yahoo is liable for the alleged criminal acts of third parties. If a significant number of foreign courts force similar requirements on Yahoo and other Net businesses, one of two things could happen.

It is one thing to attempt to punish criminals and another to shoot the messenger.

First, Net businesses could pass all enforcement compliance costs on to consumers, who will end up shouldering the burden of enforcement. The actual costs of Internet use will rise and processing time for Web page requests will increase as servers are choked by court-ordered 'watchdog' programs. Most people wouldn't be happy with this outcome.

Second, online services may cease operations in countries that impose unacceptable burdens on them. Again, this is not in the interests of consumers.

The bottom line is that the Internet was designed as an open communications architecture. Businesses like Yahoo should not be penalised for this.

Nations do have a right to enforce their own rules in cyberspace. However, they should target the real criminals and not use online service providers as scapegoats.

Colour fax *to* colour fax *without a computer.* $749.[RRP]



WITHOUT A PC.

The MultiPASS C70 is efficient, economical and easy to use as a stand-alone product with advanced fax, phone and copy functions.

Colour fax.
Send & receive colour fax to colour fax without needing a PC.

Phone features.
Includes Telstra FaxStream® Duet compatibility to allow a separate fax and phone number on the same line. Answering machine interface. Automatic redial, 12 one touch, 100 coded speed dials. Auto switching for phone, fax, answering machine modes.

Easy to use colour copier.
You don't need a PC for single sheet colour copies. As a sheet-fed B&W copier it prints up to 99 black & white copies of a single page in copy mode.

High quality, plain paper fax.
Incoming faxes are printed on inexpensive, plain paper. Ink saver mode offers better economy, and in fax mode even detects that ink has run out, and saves the document in memory. A technology called UHQ™ smoothes the jagged edges common to many faxes. With plain paper your faxes can even be stored for legal documentation without needing to make a copy.

Advanced fax features.
Delayed transmission, sequential broadcasting to as many as 113 locations, store up to 42 pages[1] in memory for incoming and outgoing faxes and more.

Handset included.

Fast black & white faxes in as little as 6 seconds.[2]



Four-colour PC printing, high speed black and PhotoRealism.

A high quality four colour system with resolution up to 720 dpi is standard. Optional PhotoRealism™ offers photo printing with low density inks for more colour combinations with smoother tonal gradations. An optional dedicated black ink cartridge has 128 print nozzles for speeds up to five pages per minute.[2]

MultiPASS™ C70
Just $749[RRP]

3-YEAR WARRANTY OPTION

Canon Customer Care.
The one-year warranty is upgradeable to three years for a minimal charge, and is backed by Customer Care hot-line support. For more information call 1800 021 167.

Canon



Colour scanner for your PC (up to 600 dpi enhanced).

WITH A PC.

Connect to a PC for colour scanning, printer functionality and the MultiPASS Suite. The fully featured Windows desktop manager allows you to send and receive faxes, store them for later viewing or printing. Scanned images can be stored as thumb-nails for easy access and viewing.



Price shown is recommended retail price including tax. Canon® and the Canon logo are registered trademarks and BJC, Bubble Jet, PhotoRealism, UHQ and MultiPASS are trademarks of Canon Inc. Microsoft® and Windows® are registered trademark of the Microsoft Corporation in the US and other countries. Telstra FaxStream® Duet is a registered trademark of the Telstra Corporation Limited. All other trademarks are the property of their respective owners. 1. Based on Canon Fax standard chart No.1 (A4, standard mode). 2. B&W print speed requires optional cartridge. Print speed may vary with document complexity and the processing speed of the host computer. Specifications are subject to change without notice. Canon Australia Pty Ltd ACN 005 002 951. ABN 66 005 002 951. C59808/12

If you thought shopping online was cheaper or easier, think again.

Just browsing, thanks

When *APC* did some window shopping on the Web sites of Australia's top etailers, we discovered that online shopping isn't all it's cracked up to be.

Nearly half of all online shoppers believe that goods sold over the Internet should be cheaper than those from a shop, according to a survey by Ernst & Young. However, the survey found that most etailers don't offer discounts and often charge more than conventional retailers. Of the 133 etailers surveyed, the prices of 74% were no better than offline retailers, and 8% were more expensive.

Despite this, etailers promote themselves as being able to provide savings by ditching costly shopfronts and distribution channels. "Consumers expect prices to be competitive and companies are not listening," Ernst & Young Australia partner Steve Ferguson said. They might not have the cost of expensive shopfronts, but the backroom and delivery processes of an Internet operation still incur costs that are passed on to consumers.

The survey identified small entertainment goods such as books and CDs as the most popular items sold over the Internet. *APC* decided to see how much consumers were spending by comparing the price of buying a new release DVD (*Gladiator* Collector's Edition) from 10 popular etailers.



Bargain shopping on the Internet is a complicated process. Each etailer charged a different price for delivering the same product. The Ernst & Young survey rated Amazon as the most popular etailer in Australia and worldwide. Shopping at a US-based site is significantly more expensive than shopping locally, thanks to the languishing Aussie dollar and added shipping costs. Amazon remains an excellent site for rare items, but the most popular goods are mainstream releases that can be bought in local shopping centres.

Of the local etailers in our sample, wishlist was the most expensive at $44.90, followed by HMV at $43.45. Only four etailers sold the DVD for under $40. Sanity had the best price of $39.20, closely followed by David Jones at $39.45. This is surprising given the cost-savings claims made by etailers: David Jones is the second-largest retailer in the country and Sanity has almost 200 music stores, while wishlist is solely an Internet operation.

According to Ferguson, over the last year the etailing world has been dominated by conventional retailers opening Web sites. Despite an increase in the number of people shopping online, many 'pure' etailers have collapsed or sold out to existing retailers after experiencing lacklustre sales. David Jones established its Web site on the remnants of failed etailer TheSpot, and dstore was forced to sell out to retail giant Harris Scarfe in December.

David Jones and dstore offered the lowest advertised price of $34.95 before shipping for the DVD. However, dstore's higher shipping charges pushed its overall price up. The highest advertised price was $39.95 at wishlist, ezyDVD and HMV.

Ferguson said conventional retailers are hesitant to participate in price wars. Without the advantage of cheapness, the only drawcard etailers have is the supposed convenience of shopping from home. However, as Australia is one of the most urbanised countries in the world with a high proportion of retail space, this is not a great drawcard for the typical consumer.

Ferguson said etailers have to give customers a reason to shop online. The only additional incentive provided by a local etailer was a free magnet offered to shoppers by ezyDVD. However, ezyDVD was also the third most expensive seller at $41.45.

Shipping costs are a major gripe among online shoppers, according to the Ernst & Young survey. "Many abandon shopping carts when it comes to high shipping costs," Ferguson said. Target and Kmart were the only sites to indicate what they charge for shipping before the final point of payment. All the other etailers in our sample force consumers to wade through pages of forms before revealing shipping prices as high as $4.95 (at wishlist). Kmart and Target are owned by Coles Myer, but Target charges $1 more for the DVD while both charge the same shipping price — the lowest at $2.95.

However, there are some signs that Australia's retail giants are willing to subsidise shipping so that online shoppers will only pay the same price as buying instore. Walking into Kmart and buying the DVD off the rack costs the same as purchasing it from Kmart's Web site. In contrast, David Jones makes online shoppers pay $2.50 more.

The survey found etailing is becoming more accepted among mainstream Australian consumers. The demographic profile of people who buy goods over the Internet resembles the average Australian consumer quite closely, Ferguson said. This new tech-savvy consumer needs to bring the same acumen they use shopping offline to the Internet.

Fiona Angus

About Price Watch

Each month, Price Watch examines variations in retail pricing and service. Investigations are conducted anonymously, either by telephone contact with retailers or through pricing details supplied on their Web sites. Prices and specifications provided here are as quoted by retailers; while we assume these are correct, we cannot accept responsibility for errors or omissions.

Online retailer	Contact details	Advertised price	Total cost after shipping
Amazon	www.amazon.com	$US21.99	$US29.94
ChaosMusic	www.chaosmusic.com.au	$37.35	$41.20
David Jones	www.davidjones.com.au	$34.95	$39.45
dstore	www.dstore.com.au	$34.95	$39.70
ezyDVD	www.ezydvd.com.au	$39.95	$41.45
HMV	www.hmv.com.au	$39.95	$43.45
Kmart	www.kmart.com.au	$36.95	$39.90
Sanity	www.sanity.com.au	$35.95	$39.20
Target	www.target.com.au	$37.95	$40.90
wishlist	www.wishlist.com.au	$39.95	$44.90

www.commander.com.au

Want $1980 off Commander® with Telstra OnRamp2®?*



There's never been a better time to update the way your business communicates. By purchasing a new Commander and connecting to a minimum of 2 Telstra OnRamp2 services, you get a superior communication system with access to 4 speedy ISDN digital lines for faster text, data and video transmissions. PLUS, you'll receive a rebate of $1980* from Telstra to offset the price of your new Commander! Looking for a company you can trust to deliver the communication solution you need? Your wish is our Commander, with OnRamp2.

Hurry, this limited offer ends 30 June, 2001. Call Commander now on 1300 733 029

PlesTel
A Plessey Telstra Alliance

* This promotion is subject to terms and conditions. You must connect to a minimum of 2 new Telstra OnRamp2 services for a minimum period of three years. Rebate of $1980 includes GST (where the customer is registered for GST purposes). An additional rebate of $990 applies per additional new Telstra OnRamp2 service connected. The GST-exclusive price paid by the customer for the equipment or the present value of the total rental payments (exclusive of GST) for the equipment, must be equal to or exceed the sum of all rebate amounts paid. Standard installation, monthly rental & call charges for OnRamp2 service still apply. PlesTel maintains the right to extend or withdraw the promotion at any time. *Further conditions apply. ® Commander is the registered trade mark of PlesTel Pty Limited ACN 082 384 343 OnRamp2® is the registered trademark of Telstra Corporation Limited ABN 33 051 775 556 PLS 339 PC

Your wish is our **Commander®**

Has one of quantum computing's major hurdles been overcome?

A light freeze

A few months ago, Cutting Edge covered an experiment in speeding up light that looked like it would turn physics on its head (see *APC* September 2000, page 70). In the experiment, light appeared to exit a test chamber *before* it had even entered it. This month, *APC* examines a related experiment, from the opposite end of the scale. In this case, light was not made to travel faster, but slowed down so much that it was stopped, held, and then allowed to continue on its way again.

When in a vacuum, light travels at approximately 186,000 miles per second (299,792,458 metres per second). Theoretically, this is the fastest that anything can travel. However, light rarely travels at this speed because any medium it passes through, such as the atmosphere or water, slows it down.

Experiments in slowing down light made big news in 1999, when scientists were able to slow light to a mere 17 metres per second. This was followed by an experiment at the Texas A&M University. Light was only slowed to 90 metres per second, but it was achieved by a vastly cheaper method using rubidium gas. Once slow light experiments were found to be affordable, experimentation in the field exploded, and in January researchers announced that light had been stopped.

The day that light stood still

A variation on the Texas experiment was conducted by a team led by Ronald Walsworth and Mikhail Lukin from the Harvard-Smithsonian Center for Astrophysics in Cambridge, Massachusetts. The experiment used a technique called electromagnetically induced transparency (EIT). In EIT, a laser is used to change the quantum states within an opaque chamber of gas. The rubidium atoms have a quantum property called 'spin', which is measured as either 'up' or 'down' in relation to the spin of the atom's nucleus. In keeping with the peculiarity of quantum physics, the spin is both up *and* down at any point in time, but once measured it resolves into one or the other, and can never be changed.

Scientists know how to manipulate the spin states of electrons and atomic nuclei by nudging them towards one state or the other without collapsing them into a final state. When EIT is used on rubidium atoms to alter their spin states, the atoms become transparent to a narrower range of light waves. This range is highly dependent on the light beam wavelength. It also changes the rubidium's refraction index (its ability to reflect light).



The new refraction index determines the phase velocity (speed) at which the light beams can travel. When the phase velocity is wavelength dependent — as it is in this case — the light beam's group velocity (the speed at which all energy travels) slows remarkably. The narrower the transmission band in the rubidium, the slower the light travels. Put simply, the laser beam used in EIT changes the ability of the gas to absorb light.

To slow the light further, the control beam that changes the quantum states must be gradually reduced as the light pulse enters the rubidium. This continues to slow the light (which grows fainter) until the laser beam is removed and the light stops.

The researchers discovered that as the beam changes the spin orientation of the rubidium atoms and is stopped, the information about the light pulse is stored in the new spin states. When the laser beam is turned back on, the light pulse is recreated from the image stored in the rubidium quantum states and resumes travelling with almost the same intensity, form and speed as before.

This research is still in its early stages, but it could eventually contribute to quantum computing, and most intriguingly, teleportation. Quantum computers rely on the fact that an atom can be in both spin states simultaneously. In computing terms, this is like having a bit that is both 0 and 1 at once. Unlike conventional PCs, which need to perform many separate calculations, quantum computers could perform calculations instantaneously as the individual quantum bits collapse into one state or the other. The experiment in slow light shows that the quantum states can be used to store information, release that information, and return to the original indeterminate state.

Teleportation is a much more distant prospect — it relies on the strange connection between quantum particles. Experiments too complex to describe here have found that a photon can have a direct and instantaneous influence on what is called its 'entangled cousin', even over great distances. Teleportation takes advantage of this property by allowing one photon to produce an identical state in an entangled photon elsewhere, effectively teleporting the conditions from one to the other. So far, this works with photons and quantum particles, but teleporting a person is a very different proposition.

The principle behind the Harvard-Smithsonian light stopping experiment could be used to teleport the frozen light quanta from one area to another, by replicating the states in another area. Theoretically, the light could enter one area, be held, transported to another area, and then released.

It will be a while before any practical applications are available, but the experiment has opened up some exciting avenues of research.

Darren Ellis

Make your web site PAY!

Secure, Easy & Affordable Online Payments

Use the system *every* bank uses.

directOne

Faster, more versatile, more economical.

NEWSFLASH! directOne selected by Bendigo Bank to provide full e-commerce services; the ONLY Australian Gateweay system selected by an Australian Bank!

Take real-time credit card payments for your products and services on-line...

24 hours a day, 7 days a week!

www.directone.com.au

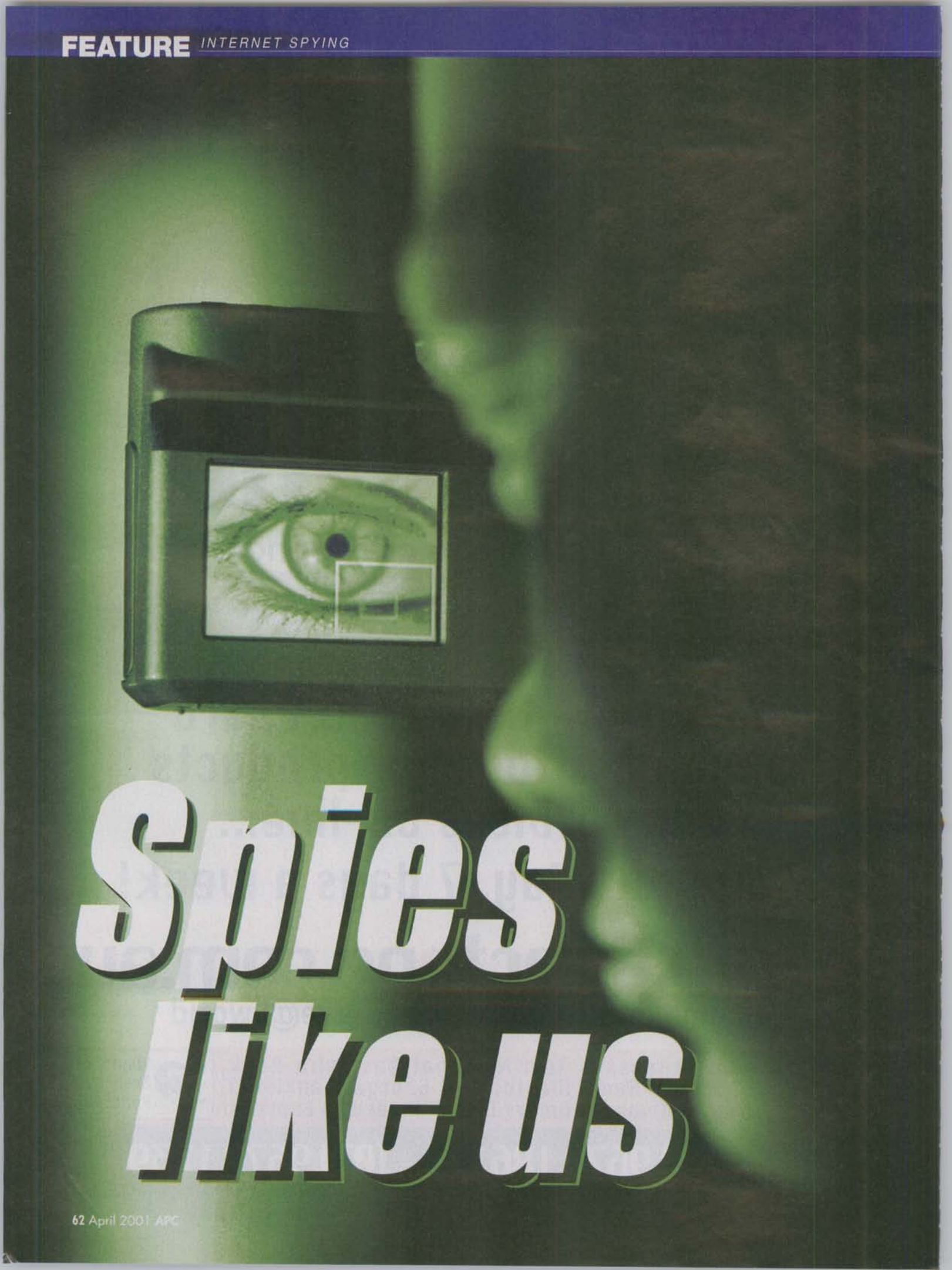
e-commerce solutions for the re@l world

DirectOne also processes for: National Australia Bank, ANZ, Commonwealth Bank, Westpac, St George, BankWest, BankSA, Bank of Melbourne, Diners Club & American Express!

CAMTECH Winner of Best Payment Portal 2000

ph - (03) 9670 1861 fx - (03) 9670 1239

ACN: 088 639 034 ABN: 28 088 639 034 GPO Box 900G Melbourne Victoria 3001



Spies like us

Forget the invisible ink; these days, spying is more likely to involve a PC and a Web browser. The Internet has created a whole new set of opportunities for spies, from secret intelligence agents to people like you. ***William Maher*** *finds out all about it.*

Every day, billions of email messages are sent around the world. Many contain personal information meant only for the people to whom they are addressed: names, addresses, phone numbers and private discussions. Many people don't realise how easy it can be for a third party to read this information, most of the time without your knowledge.

This problem has been brought to light by ongoing discoveries of security holes in popular software. For example, Microsoft has had to deal with a continuous string of highly publicised security holes, some involving its Outlook email browser.

However, it's unfair to suggest that Microsoft customers are the only potential targets for spies. There are question marks over all sorts of Internet security technology, even the digital signature algorithm used to protect credit card details. Hackers have managed to weasel their way into the largest of corporate networks, including Microsoft's.

This doesn't mean that people should start disconnecting their modems. There is usually no reason for anyone to want to tap into your private data. However, it's important to understand what sort of snooping is currently possible.

With the right technical knowledge, it is surprising how easy it can be to pry into other people's affairs online. Indeed, the Internet has the potential to make spying a whole lot easier.

Government intelligence agencies realised this long ago, and suspicion is growing that the Internet is being used for more than we realise.

Who's watching who

Despite their best efforts to keep their activities quiet, intelligence agencies have managed to attract a lot of attention to the spying that can be done online. Take, for example, the case of the US Federal Bureau of Intelligence (FBI) and a small piece of software named DCS1000.

Don't be surprised if you haven't heard of DCS1000; until early this year, the software went by the far more colourful name of Carnivore. Carnivore has sparked a great deal of controversy in the US, with privacy and consumer rights groups calling for all details about the tool to be released. There has even been a congressional hearing to examine the software, during which the FBI was forced to release documents proving that Carnivore exists.

So what is it about Carnivore that has caused so much interest? The tool allows the FBI to intercept and monitor private email and Internet traffic secretly. Targets don't know their PCs are being monitored.

Exactly how much data is intercepted depends on the type of warrant obtained by the FBI. For example, the system could be used to record the To: and From: lines in an email address, subject headers, or in extreme cases, entire email messages.

The system consists of a terminal box loaded with the Carnivore software which is then mounted on a rack next to a commercial ISP's network equipment. The software acts as a packet sniffer, filtering all Internet traffic while it looks for certain data such as email messages. The ISP knows the box is there, but the target and other Internet users are none the wiser.

What if anonymous spies could secretly monitor phone conversations, faxes, emails — anything transmitted over phone lines or data cables?

Carnivore has existed for a number of years. Work officially began on a prototype in 1997; and by late 1999 Carnivore was no longer beta software. By mid-2000, there were 16 instances on public record of the system being used; six times in criminal cases and also in 10 national security cases involving suspected espionage or terrorism. The FBI has said that the tool is only ever used to eavesdrop on suspects, not the general public.

Anonymous spies tapping into our email is one thing, but what if they could monitor our every move? What if they could secretly monitor our phone conversations, faxes and emails — anything transmitted over phone lines or data cables? Some people believe an international spy network codenamed Echelon is already doing this.

According to much-hyped media coverage, Echelon is a network of spy bases around the world that monitor terrorist activity and other security threats. It's alleged that the main form of surveillance utilises satellite dishes located in Australia, the US, Canada, the UK, New Zealand and elsewhere.

Echelon's capabilities are subject to much speculation. Some sources suggest that Echelon could intercept 3 billion phone calls, faxes or emails every day. It's also suggested that the system sifts through 90% of the world's Internet traffic. As if that's not enough, US divers have allegedly installed wiretaps on data cables under the ocean.

Perhaps the most well-known Echelon device is the Dictionary. Data collected through Echelon is supposedly fed through a massive search system that looks for keywords. The Dictionary, as it is known, is supposedly updated continually and used to flag phone conversations or emails that might warrant eavesdropping.

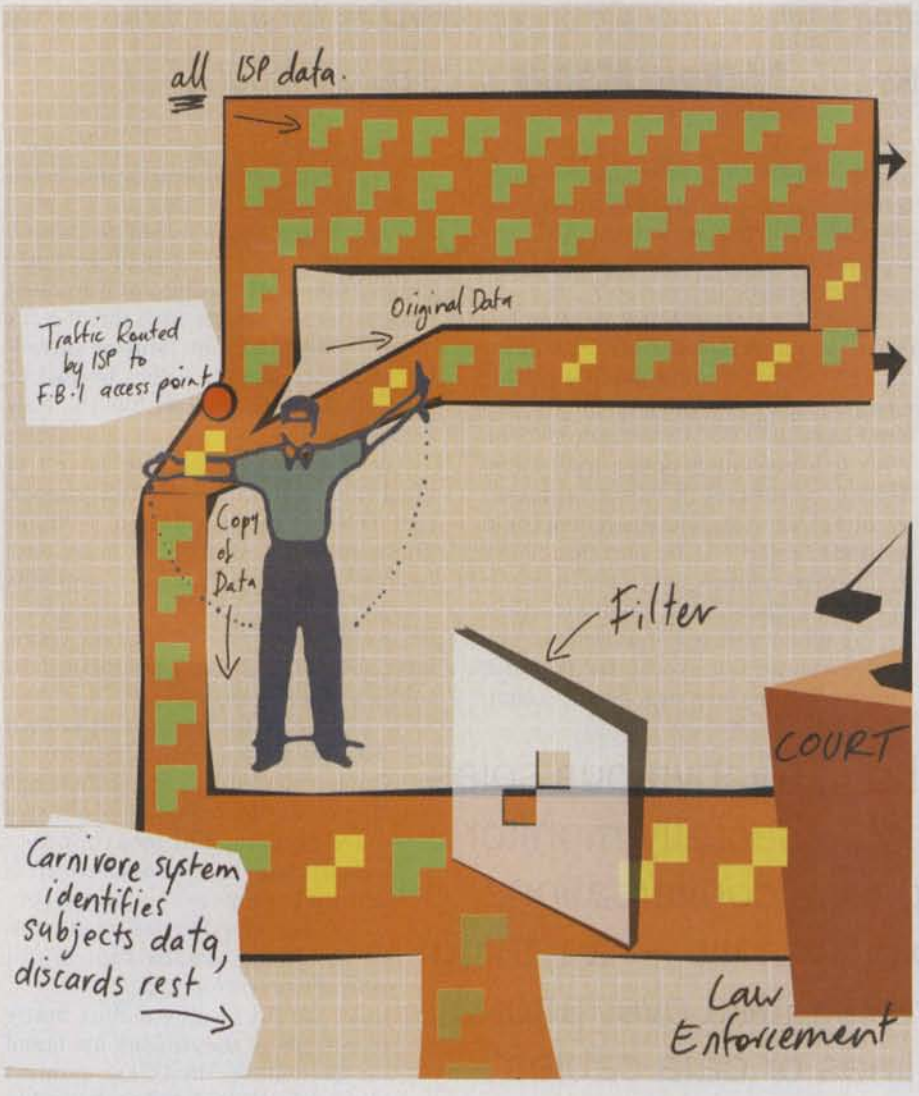
It should be noted that many reports about the network are based on speculation. The US Government won't talk about Echelon, but other countries, including Australia, have admitted to taking part in international electronic spying. The name has certainly sparked fear and paranoia among many people; there is even an Internet site concerning Echelon at echelonwatch.org.

What about government spying efforts in Australia? Is there any evidence that law enforcement and intelligence groups are interested in gaining access to private computer files? The answer is yes.

In January 1999, a privacy group announced that it had obtained a government report on electronic security. The report, *Review of Policy Relating to Encryption Technologies*, was written in 1996 but withdrawn from sale. Some copies must have slipped through, because years later a university student reportedly stumbled across the document in the State Library in Hobart.

The report revealed a government push to have laws changed to allow the police and other law enforcement agencies to hack into private computers.

How the FBI's Carnivore system works



There was also a proposal to give Australian Federal Police, the National Crime Authority and ASIO power to alter proprietary software, effectively turning PCs into listening devices. The proposals became the basis for the ASIO Amendment Act 1999, which gave ASIO the power to tap into private computer systems for surveillance purposes.

Under the new rules, ASIO can use "a computer; or a telecommunications facility operated or provided by the Commonwealth or a carrier; or any other electronic equipment; for the purpose of obtaining access to data that is relevant to the security matter and is stored in the target computer and, if necessary to achieve that purpose, adding, deleting or altering other data in the target computer".

Politicians stressed that they were only modernising ASIO's existing powers, but some people were alarmed by the change. Of particular concern is the clause that gives ASIO the power to add, delete or alter data on remote computers. ASIO is also allowed to conceal the fact that it has been spying on someone's data.

Does ASIO potentially have the ability to pry into the hard drives in people's offices and homes? Not without permission. A warrant must be approved by the Attorney-General before any spying can take place. Permission can only be granted if there are "reasonable grounds" for believing the data will substantially assist investigations into a security matter.

How ASIO agents would break into private data systems isn't clear. If there are difficulties, the act allows ASIO to use the help of telecommunication carriers such as Telstra or Optus to gain access to data.

Laws are also being passed in other countries to ensure that carriers can be enlisted to help pry into private data. In the UK, a new law came into effect late last year that allows police with a warrant to sift through a suspect's email and Internet traffic. In some cases, 'black boxes' can even be placed inside ISPs, allowing law enforcers to read encrypted messages.

DIY spying

It's not just Echelon and secret agents that you have to worry about. A lot of electronic eavesdropping happens for reasons other than national security — some Internet users are realising it's possible to do some simple spying themselves.

Internet users can 'bug' email conversations, just like spies used to do in the old days. The technique was supposedly first discovered years ago, but there has only recently been discussion about what this might mean for privacy.

The process of bugging an email conversation is relatively straightforward. First, a passage of JavaScript about 20 or 30 lines long is embedded in an email message. In most cases, JavaScript is used to help build Web pages, but in this case it is programmed to copy and forward the contents of an email message. The JavaScript is also invisible to anyone reading the email message.

With the JavaScript embedded, the email is sent to the unsuspecting recipient. That person might forward the message to someone else, along with his or her own comments. Each time this occurs, the JavaScript copies the message and sends it to the eavesdropper. In this way, an entire email conversation can be secretly monitored.

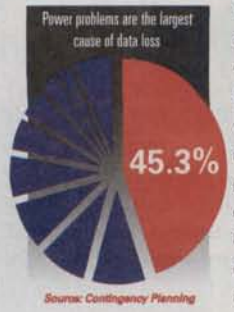
It is possible to detect a Web bug if you know what you are looking for; just view the source code of the message and look for any suspicious JavaScript. You can even find out where the text is being sent.



▲ The official Web site for hacking tool Back Orifice

Because power problems are the biggest cause of hardware and data loss, protect your computer equipment with APC

According to a study by IBM, your PC system is subject to an average of 128 power disturbances per month. Power problems range from the subtle — keyboard lock-ups and frozen monitors — to the serious — hardware damage and complete data loss due to surges and blackouts.



Protecting your home PC or small business' valuable data against power problems is simple with the award winning APC Back-UPS, the reliable and affordable power protection solution designed especially for your PC. Remember, when it comes to power problems, it's not "if", it's "when".



APC Back-UPS award-winning features include:

- **3 outlets** provide instantaneous battery back-up and surge suppression for your PC, monitor and an additional peripheral to work through power outages and sudden voltage dips without losing your files. During extended power outages, Back-UPS gives you enough time to save your work and shut down your computer properly
- **1 Surge protected outlet** protects your laser printer from damage due to surges and spikes
- **Lightning and surge suppression** to protect your computer and its peripheral equipment from catastrophic damage
- **Noise filtration** Back-UPS protects against high frequency electrical noise that can damage files and create software errors
- **Quick battery recharge** enhanced charging technology allows Back-UPS batteries to recover from power outages as fast as possible, and ensures they are ready for the next power event

Recommended by network and electronic vendors worldwide

APC power protection solutions are recommended by network and electronic vendors worldwide. Microsoft, NEC, IBM, Novell, HP and other vendors stress the importance of protecting workstations.

APC has won more awards for reliability than all other vendors combined

For a very small investment, you receive the best value in power protection, securing your expensive PC, peripherals and data, whilst providing you with complete peace of mind.

All APC products have a 2 year warranty, backed by free comprehensive Tech Support. Contact APC today and find out how the company that protects over 8 million satisfied customers worldwide can safeguard your system.

Visit us at www.apcc.com for more information and our Dealer Locator to find your nearest APC reseller.

WIN a Back-UPS 300!

To be in the draw to win a Back-UPS 300, simply fill in the form below, or register on-line at promo.apcc.com.

APC®
Legendary Reliability™

Name: _____
Job Title: _____
Company: _____
Address: _____

City/Town: _____
Postal Code: _____
Phone: _____
Fax: _____

E-mail: _____
How many PCs do you want to protect? _____
How many servers do you want to protect? _____
Your organisation is:

- ☐ Small/Medium Business (less than 200 employees)
- ☐ Corporation (more than 200 employees)
- ☐ Computer Reseller/VAR

FREE Back-UPS product information and enter me in the draw to win



- ☐ **YES!** Please send me FREE APC Back UPS product information and enter me in the draw to win a Back-UPS 300.
- ☐ **NO** I'm not interested in purchasing APC Back UPS. Please add me to your mailing list.

Register on-line at http: //promo.apcc.com and enter the code 48513K
or fax now on (02) 9955 2844 or call 1800 262 178

APC Australia: Level 27 Northpoint, 100 Miller Street, North Sydney, 2060, NSW

www.apcc.com

©2000 American Power Conversion. All Trademarks are the property of their owners. BK3DOEF-AU

* Recommended Retail Price including GST



This isn't the only way that Web bugs can be hidden in email. Instructions can be inserted telling the email reader to insert a tiny invisible image in the message. When a request is sent to a remote server for the image, other information can be gathered about the victim, including their IP address.

Not all email is affected by Web bugs. The bugs only work in email readers that recognise HTML-enabled email; in other words, messages that can include elements of a Web page. Even if your email reader can display these Web components, it might not allow JavaScript to operate, rendering the bug useless. For example, JavaScript doesn't work with Web mail services such as Hotmail.

It is important to understand that most Internet users will never encounter an email bug. Unless someone is determined to discover personal information and happens to know a lot about JavaScript, it is unlikely they would ever resort to email for eavesdropping.

Web bugs are just one of many ways to see what's inside another person's PC. Hackers have managed to exploit all sorts of security holes in popular software, and not just Windows. Linux, Unix, Solaris and Macintosh machines are all vulnerable to hacks from Internet snoops.

With the right contacts, it is even possible to collect tools specifically designed to spy on other people. Back Orifice is possibly the most infamous example; the ultimate 'back door' for spying on someone's PC.

Back Orifice first made headlines several years ago, with startling claims that the tool could be used to monitor remote PCs secretly. Snoops supposedly got complete control over their target PC, including the ability to upload and download files, read everything typed on the keyboard, and capture images from the PC's monitor.

Again, most people would be very unlucky to fall prey to Back Orifice, as the program needs to be installed on the machine for it to work. However, it can be hidden or disguised as another program.

IP numbers are often necessary to track someone online, and can be particularly useful when the target uses a cable modem. Dialup ISP customers have a different Web address, or IP number, every time they go online. However, many cable modem users have a permanent IP address, making them a fixed target for would-be spies.

Australian Security Intelligence Organisation Act 1979

Section 25A — Computer access warrant

Issue of computer access warrant

(1) If the Director-General requests the Minister to do so, and the Minister is satisfied as mentioned in subsection (2), the Minister may issue a warrant in accordance with this section.

Test for issue of warrant

(2) The Minister is only to issue the warrant if he or she is satisfied that there are reasonable grounds for believing that access by the Organisation to data held in a particular computer (the target computer) will substantially assist the collection of intelligence in accordance with this Act in respect of a matter (the security matter) that is important in relation to security.

Authorisation in warrant

(3) The warrant must be signed by the Minister and must authorise the Organisation to do specified things, subject to any restrictions or conditions specified in the warrant, in relation to the target computer, which must also be specified in the warrant.

Things that may be authorised in warrant

(4) The things that may be specified are any of the following that the Minister considers appropriate in the circumstances:

(a) using: (i) a computer; or

(ii) a telecommunications facility operated or provided by the Commonwealth or a carrier; or

(iii) any other electronic equipment;

for the purpose of obtaining access to data that is relevant to the security matter and is stored in the target computer and, if necessary to achieve that purpose, adding, deleting or altering other data in the target computer;

(b) copying any data to which access has been obtained that appears to be relevant to the collection of intelligence by the Organisation in accordance with this Act;

(c) any thing reasonably necessary to conceal the fact that any thing has been done under the warrant;

(d) any other thing reasonably incidental to any of the above.

OFFICIAL

Do you have protection?

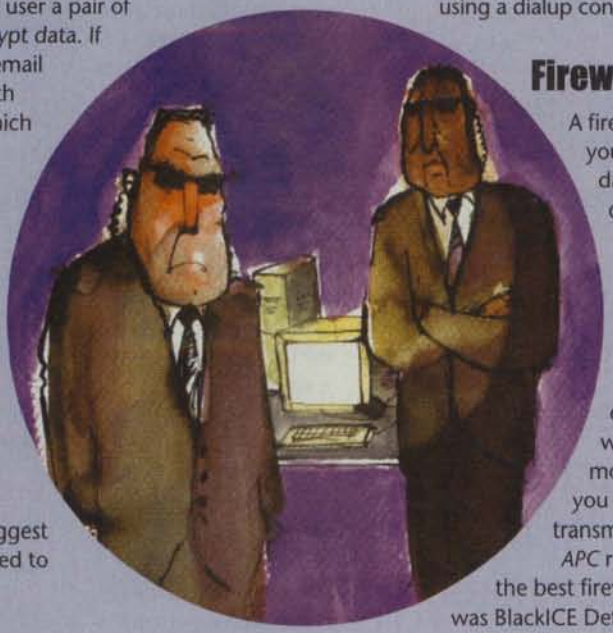
Keeping the contents of your PC private requires the use of numerous programs working in concert with each other. In this section, *APC* takes a look at the main ways you can protect your PC from unwanted intruders. Many of the programs discussed in this article have also been included on our cover CD.

Email encryption

Good encryption is one of the best forms of privacy protection, and this is particularly true when it comes to the Net. When you send an email, it travels through other computer systems to reach its destination. Every computer your email passes through is a potential spot where it can be captured and read. Many of the latest email clients, such as Microsoft Outlook and Eudora, come with basic forms of encryption to guard your mail from observers. For the best protection, you really need to use a dedicated program that uses digital certificates.

One of the most widely accepted and utilised standards is PGP (Pretty Good Privacy). PGP gives every user a pair of 'keys': one to encrypt and one to decrypt data. If someone wants to send you a secure email using PGP, you must provide them with your encryption key (or public key) which they then use to encrypt the message. Your second key is private, and allows you to decrypt emails that have been encrypted using your public key. Without this second key, which is password-protected, no-one can read your emails.

The biggest problem with high-end encryption is that most of the time the recipient needs a copy of your mail encryption software to decrypt your email upon delivery. For email encryption to take off properly, everyone needs to start using it; its biggest shortcoming is that it is mainly confined to privacy fanatics.



Cookie washers

Most people will have heard of Internet cookies. They are small text files that Web sites use to store information on your computer so that it can be retrieved at a later date. These can be handy for many Web users, as they are often used to save personal preferences and mean you don't have to sign in every time you visit a Web page. For example, when you visit Amazon.com and enter your user details, the computer you are using will subsequently be recognised as you (unless someone else signs on using the same machine).

Recently, cookies have been used by advertisers to track individual surfing habits. This information is then used to identify which people are most suited to different ads. One of the most prominent advertisers on the Web, DoubleClick, has been threatened with lawsuits over its use of cookie technology to create customer profiles.

The easiest way to get rid of cookies is to turn them off in your browser. However, the problem with this approach is that many Web sites now require cookies to be turned on for you to view the content.

Cookie washers allow you to control which cookies your computer accepts and which ones are deleted. Most of them learn by tracking which cookies you accept and reject, creating a profile of their own to combat cookie glut.

Web browsing anonymisers

If you want to stay truly anonymous when surfing the Net, a Web anonymiser might suit you better. These allow you to surf anonymously by passing your Net connection through a secondary 'proxy' server. The proxy requests Web pages on your behalf.

Anybody monitoring your Net access will only see traffic to and from the proxy. This means that people cannot monitor your Web surfing remotely, and cookies cannot be stored on your computer permanently, thus keeping your Web habits private.

One of the main disadvantages of using a Web anonymiser is that you must rely on a secondary server to retrieve the Web pages you visit. This can slow down page loading, especially if you are using a dialup connection.

Firewalls

A firewall is another means of preventing your computer from giving out private data. When you are online, your computer uses ports to communicate with the Web. There are 6,334 different ports, each used for different types of data transmission. For example, port 80 is used for standard HTTP Web surfing and port 21 for FTP servers. Unused ports are often used to gain entry to your PC without your knowledge. Firewalls monitor the ports on your PC and alert you to any unauthorised attempts to transmit or receive data.

APC recently did a comparative review of the best firewalls on offer. The winning product was BlackICE Defender from Network ICE, and Zone Labs ZoneAlarm received our highly commended award (see *APC* January, page 102).

Spyware

A recent development in customer tracking is the use of programs known as 'spyware'. Many downloadable freeware, shareware and trial-version programs contain hidden components which covertly use the Net to send data back to their parent companies without your knowledge. Some of the biggest players on the Net have been caught using spyware, including RealNetworks (which has since issued press releases proclaiming a complete turnaround in company policy with regard to the issue).

The Gibson Research Corporation (www.grc.com) is dedicated to online security and privacy, and its freeware OptOut program (included on the cover CD) does a good job of finding any spyware programs running on your system. An updated list of spyware is available at www.infoforce.qc.ca/spyware, and a searchable database can be found at www.spychecker.com.

Daniel Gardiner

IP numbers are particularly useful to those trying to pry into a server. There are a number of Unix hacking tools that can be used to scan server ports or that try other means of gaining entry to Web-connected machines.

How safe are we?

Many people probably think their data is safest on their office PC; after all, most large companies have firewalls and intrusion detection. However, the opposite is probably true. Computers connected to office networks are accessible to a multitude of prying eyes, often people working within the company.

One of the more invasive spying technologies available to employers is the keyboard logger — a small piece of hardware designed to connect discreetly to a computer keyboard. The keyboard logger invisibly records everything typed on a PC. There is no software installed and unless the worker closely examines the keyboard connection, there is no indication that they are being monitored.

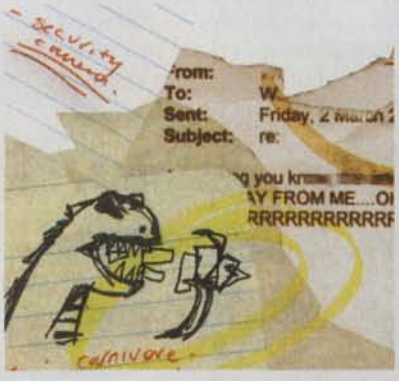
Software loggers take the spying game a step further, recording everything that happens on the computer screen. This can include which applications are run, by whom and for how long. All the information is secretly emailed to whoever is in charge of monitoring the company's network.

Some IT departments in large companies have free rein over virtually all Internet traffic and server activity on the network. That means they can examine which Web sites staff are looking at, what they are downloading, even who they send email messages to. IT staff sometimes even open email attachments to check that bandwidth is not being wasted by adult content or spam.

Telstra staff know all too well that their data can be read by others. Last year, 27 staff were suspended and another 35 issued with warnings after porn was found stored on company servers. Similar incidents have occurred at WorkCover and the Australian Bureau of Statistics.

Workers can also be watched automatically using monitoring software. NetMaster records the sites each person visits, when they use the Internet, and even where they send email. The program could be used to find out who spends the most time online, who receives the most email, which staff surf the Web late at night, or even who is searching for jobs online. WebSpy is a similar program. Both programs are sold to employers who want to cut Internet costs and crack down on staff who misuse company resources.

It's not only employees who are being watched as they surf the Web. There is growing evidence that Web-savvy companies are trying to monitor the activities of Web surfers for marketing purposes. In most cases, Internet surfers are totally unaware they are being watched.



There is growing evidence that Web-savvy companies are trying to monitor the activities of Web surfers.

There are two simple techniques used on many commercial Web sites to spy on visitors. The first is the Web bug. Web bugs can be placed on an Internet page and when a person visits that page, the bug records the visit as well as the visitor's IP address and type of browser.

The bug can also request information from cookies stored on the visitor's PC. A cookie is a small file created when a person visits a particular Internet site. That information might include the times the surfer visited the site, but it doesn't include personal details like names or addresses. If you check your hard drive, you might find a cookie for each of the sites you visit regularly.

By collecting data from the cookies on a Web surfer's hard drive, advertisers can build a profile of an individual's Web surfing habits. It's possible for people to contribute to this profile without ever choosing to be involved.

In the US, Internet users have reacted strongly to this snooping, with some filing lawsuits against advertising companies. Last year, Internet advertising company DoubleClick even planned to match up anonymous cookie data with real names and addresses. The plan was quickly shelved after public outcry.

Corporate spying: who's getting caught

No-one disputes that large companies and institutions are popular targets for spies, and the problem is increasing.

In November 1998, a computer crime survey involving the Victorian Police and Deloitte Touche Tohmatsu was sent to 350 of Australia's largest companies. One-third of the respondents reported an 'attack' in the previous 12 months and 58% of those attacks were thought to be from outside the company's internal network. In 71% of cases, the most likely cause for the attack was thought to be curiosity.

The Australian Computer Emergency Response Team (AusCERT), an assistance centre attached to the University of Queensland, claimed to have received reports of 8,197 IT security 'incidents' last year. These included attempts to hack into private data systems, as well as malicious attempts at damage by planting viruses or crashing servers.



Yet only a fraction of intruders ever seem to be caught. Five years ago in the US, laws were introduced to stop trade secrets from being stolen, usually electronically. Media reports say that authorities are yet to charge anyone under those laws for stealing secrets across state borders.

Meanwhile, fears are growing that electronic espionage is increasing. There have even been claims that Echelon has been used to help US companies secure lucrative contracts. French companies have accused the US National Security Agency of spying on their commercial dealings and passing secrets on to US competitors. Similar allegations have been tabled in the European parliament.

True or not, the stories make for great headlines. Data security is a hot topic and has encouraged many companies to investigate data security risks. Corporate consultants such as PricewaterhouseCoopers now hire out investigators to deal with hackers.



QUEUES

imageRUNNER. MORE THAN JUST NETWORK DIGITAL PRINTING AND COPYING.

Because Canon's revolutionary imageRUNNER prints so much faster than other conventional network printers, standing around waiting for printouts is now a thing of the past. Thanks to unique new iR Controller architecture, documents are processed faster and can be prioritised from your desktop. In fact, from any PC on your network you can print and build documents utilising extensive finishing options to complete the whole task. All from the comfort of your own desk.

To learn more about the imageRUNNER series call 1800 351 511 or visit our website at www.canon.com.au

imageRUNNER
changes will be made

Canon

e-mergency

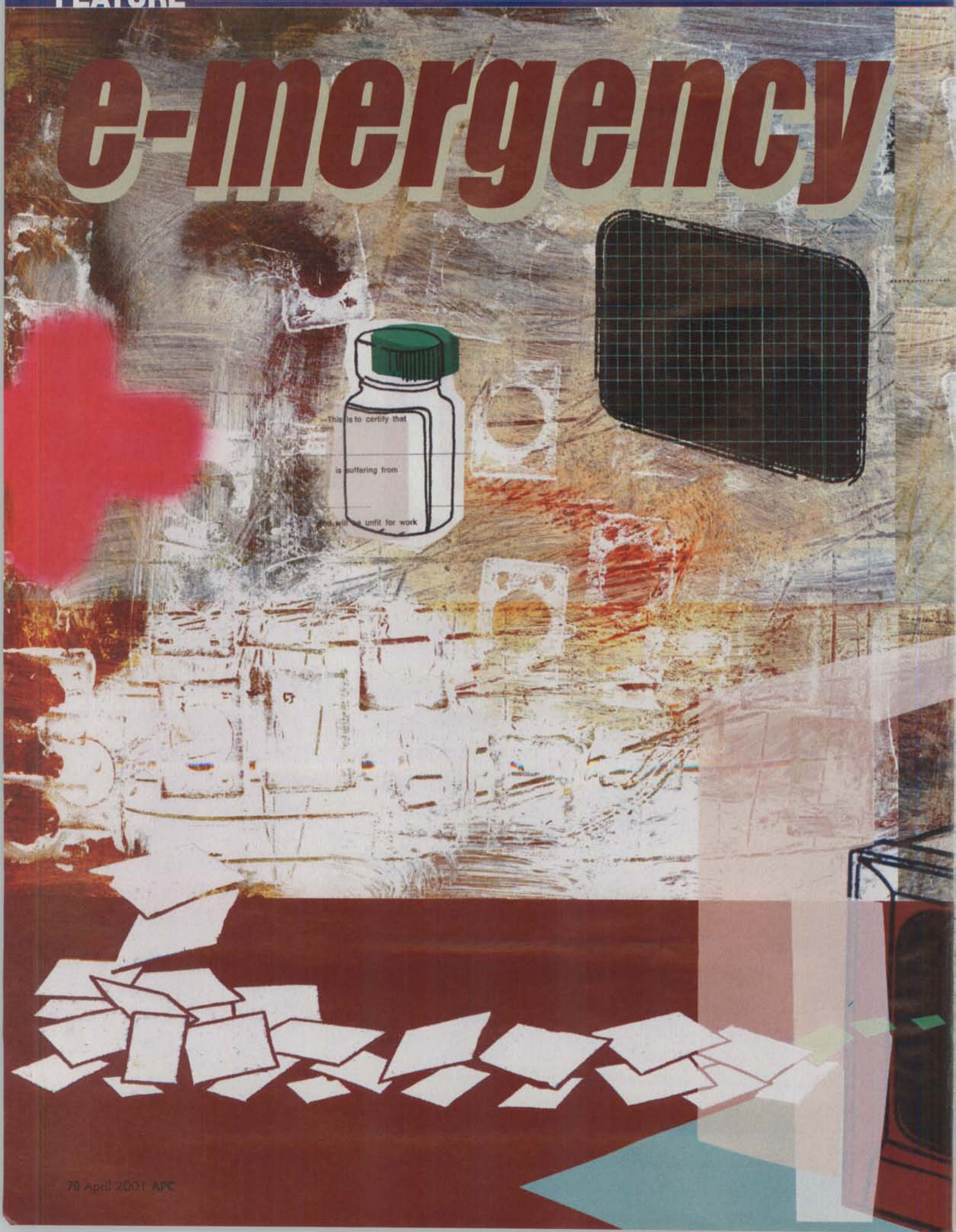




Illustration by Warren Taylor

Australia's health system is in disarray as doctors struggle to come to terms with ehealth. As ***Fiona Angus*** *discovered, patients could be missing out on potentially life-saving improvements to healthcare.*

Ehealth has the potential to improve patient outcomes and create safer hospitals, but so far, Australian doctors and governments have been slow to embrace new technology. The electronic communication of health information is transforming the relationship between patients and doctors. However, concerns about threats to patient privacy and security, political interests and the power of the medical profession are blocking the transformation.

Australia's ehealth record

At the centre of the shift to ehealth is a debate over the control of electronic medical records. Some critics are concerned that the electronic storage of medical records would leave them vulnerable to unauthorised access. Others believe the current record system is already insecure.

Dr Peter Yellowlees is the director of the Centre for Online Health at the University of Queensland. The centre conducts research into ehealth and has already established one of the world's largest telemedicine networks throughout Queensland. "One of the advantages of electronic storage — and this is not well understood — is that it can provide a more secure environment," he said. "At present, the system for keeping medical records is very insecure. I guarantee you that I can walk into any public hospital in Australia and pick up someone's medical record — and you can quote me on that."

Right now, efforts to improve the health system by introducing electronic management of healthcare are in disarray. Australia spends $50 billion on health each year — almost 9% of the gross domestic product. Of this, about $10 billion is wasted on inefficiencies, duplication and other avoidable expenditure.

Failing to provide proper care in hospitals is a leading cause of death in Australia and around the world. According to the 1996 *Quality in Australian Health Care Study*, about 18,000 people die in Australian hospitals each year as a result of an 'adverse event' or a 'medical misadventure' where the doctor accidentally kills the patient. This is partly the result of dangerous drug interactions caused by the administration of medications by doctors acting without the right information. The way information is organised and accessed in the health system is central to this problem.

Your medical records are usually stored at your GP's practice. Other medical institutions you visit keep separate records of any treatment you receive under their care. In an emergency, there is no systematic and reliable way of cross-referencing these records; of finding out about a patient's medical history, allergies or prescribed drugs.

Now the NSW Government is planning to set up an electronic database of medical records for its 6.5 million residents. The plan could give patients easy and direct control over their own records for the first time. According to NSW privacy commissioner Chris Puplick, "Patients must have informed access to their records and complete control over who is given access."

Electronic transfer and storage offers big savings for the government in the long term. A single, centrally located record could prevent people from going to different doctors to double up on treatment and prescriptions. A central electronic database could provide vital medical information such as blood group and allergies in an emergency, but patients could restrict access to sensitive information, such as AIDS tests or treatment for mental illness. To ensure equal access to records, the idea of providing access through ATM-style kiosks at Medicare branches was floated. In Puplick's view, a 'lowest common denominator' approach to technology must be adopted if the plan is ever to go national.

Yellowlees is a member of the National Electronic Health Records Taskforce — part of a Federal Government ehealth 'action plan'. A report from the taskforce confirmed that overall patient care and safety can be improved if ehealth standards are agreed on. The report says that Australia has been slow to set standards for ehealth, and that this has held back improvements in the sector.

"Until [standards for health information are adopted] and health care providers collect data in a standard format according to

Privacy, security and the online health record

Australian ehealth company Health Communications Network struck fear into the hearts of patients when it revealed a plan to sell patient information it had collected through software provided to GPs.

According to Dr Simon Leslie, this is the kind of enterprise that has caused many patients to be wary of ehealth. "So far, there has not been a lot of success in the technology and health area. Some companies went around trying to make money collecting people's data, and people haven't been happy with that."

Dr Leslie is the Australian director of operations for Doctor Global, a New Zealand-based company which allows patients to create and manage their own online health record for an annual fee. He said Doctor Global is strictly a patient-centred operation. "Ours is a consumer-controlled record. The current view is that doctors make the record for their use in practising medicine. We've turned that on its head — as a consumer, you take the record to your GP."

Dr Leslie said the company would never release information without patient consent. "Our data may be used for research purposes in the future, with the permission of individual patients," he said. "We can't practise medicine without privacy — it's part of the doctor/patient relationship and we have to maintain that ethic."

The record holds a lifetime of medical history, from X-rays and test results to historical graphing for conditions such as high blood pressure. Patients can view their record from a Web browser and allow their GP or emergency staff to access certain parts of the record while keeping sensitive information confidential.

Doctor Global went ahead with the online health record before the Federal Government had set any formal standards for electronic health records. The record cannot be transferred to a public hospital, but has been developed with the appropriate protocols to progress to this stage, according to Leslie. The format of the record is based on the widely accepted standards developed by the international Good Electronic Health Record (GEHR) project. The information is encrypted and patients keep their password independently



of the company. The record is not stored with Doctor Global but outsourced to an unidentified IT company where data is archived for a period of at least seven years.

Dr Leslie said the online health record allows patients to become more informed about their health by providing better access to their medical information. "When they leave their doctor, most people don't feel they have enough information," he said. Patients and GPs can use the record as a platform to communicate or send test results between consultations. The Internet can also deliver better services to people in remote areas and countries without reliable health services.

"It is really an extra way of communicating, it is not intended to replace face to face interaction," Leslie said.

widely accepted definitions, it is virtually impossible to link data generated in various parts of the health care system in any meaningful way," the report states. The taskforce warned that without standards, some hospitals and GPs will be excluded from the electronic exchange of health information.

The federal government taskforce is attempting to coordinate a number of specialist groups undertaking ehealth projects. Efforts in the area, including the NSW plan, are splintered, as each group has its own political interests. The taskforce has called for a balance between consumer, public and private interests.

Health is an information-based industry and the way health information is collected, stored and accessed is a central part of the health system. Who controls the central unit of the health system, your medical record, is a contentious issue. "In the long run, the consumer will have control of their medical record," said Yellowlees. However, the Australian Medical Association (AMA) is fighting the NSW plan. The AMA wants the system to leave control in the hands of doctors, and has branded the NSW plan as "unnecessary".

"The data should be stored at the doctor practice level," AMA federal president Kerryn Phelps said.

As the primary custodians of medical records under the present system, doctors have a lot to lose in the move to a central database or a system that gives more control to patients. The AMA has set up its own electronic health record project under the General Practice Computing Group. This is one of the projects the federal government is trying to coordinate to ensure consistent standards across the health system.

Phelps warned that current privacy laws are not strong enough to protect patients. "Electronic health records could bring benefits for patients and doctors, such as reducing the likelihood of dangerous drug interactions or the need to undertake duplicate tests. But there are serious privacy issues that need to be addressed first," she said.

Phelps points to a recent incident where Centrelink accidentally published almost 1 million confidential welfare numbers. The NSW plan would be based on a similar patient identifier. The AMA also commissioned a survey that found 66% of Australians do not trust the government to safeguard their medical records.

The Federal Health Minister, Dr Michael Wooldridge, has twice come under fire for his links to the pharmaceutical industry. In February, Wooldridge appointed a former drug industry lobbyist and a director of a bio-tech company to an independent body that recommends which drugs will receive government subsidies. Previously, Wooldridge was linked to the infamous multi-million dollar 'scan scam', in which some radiologists gained insider knowledge of an upcoming government subsidy.

With so much valuable data on tap, governments may not be able to resist selling patient information to pharmaceutical companies, or using parts of the database for research purposes.

Is Big Brother waiting?

At present, there is no strong legislation to protect consumer privacy. According to the Australian Consumers' Association (ACA), the privacy legislation that protects medical records is weak. The ACA unsuccessfully lobbied to have special protection given to medical information in revised privacy laws that were passed late last year.

"To our minds, privacy safeguards need to be bulletproof, and in the Privacy Bill, safeguards weren't there," ACA senior policy officer Charles Britton said. He believes there are dangers in building a central database of electronic health records. "Once the

Cost of developing and implementing a national health information network over the next 10 years ($m)

Year	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	Total over 10 years
Total	21.63	15.69	56.85	51.45	52.98	38.53	41.77	46.15	52.59	55.69	433.31

Source: National Electronic Health Records Taskforce

database is there, it's hard to stop an incremental attack on privacy," he said.

In Britton's opinion, the plan to introduce electronic health records in NSW has the potential to deliver benefits to patients, but it is vital that no other party has the power to veto patient control. This includes doctors. "I think they see themselves as custodians of welfare, but consumers should always have maximum information and control." He also claimed that the database would be an attractive source of information for medical researchers.

Britton argues that any database must be protected by strict regulations and diligent governance to prevent undue intrusion by researchers. "We are not happy for identified data to be released in any form."

Governments are not the only prying eyes interested in your medical history. Britton said patient privacy is tied up with the issue of the corporatisation of medicine. "There is concern as more practices get bought up," he said. "Companies that run a private practice operate under a corporate imperative and data holdings become valuable."

> "Companies that run a private practice operate under a corporate imperative and data holdings become valuable."

The corporate sector operates under a different dynamic to public or nonprofit organisations. "Within the corporate structure there is more room to manoeuvre and more ways of navigating information. In theory, companies can bring together information from many different sources across their business," Britton said.

With new technology comes new and unfamiliar service providers in the health system — IT companies. These companies could end up hosting a valuable database of health information, and in doing so, creating privacy issues current laws are not designed to deal with. Under such an uncertain system, it will take court battles to determine what companies, governments and consumers can do.

Inside the emergency room

Ehealth outsourcing company IBA Technologies builds and operates clinical and administrative IT systems in hospitals. IBA executive chairperson Gary Cohen has first-hand experience attempting to incorporate IT infrastructure into Australia's public hospital system on a commercial basis. He describes Australia's ehealth record as "very poor".

ACARD TECHNOLOGY

Objections to poor **IDE RAID** performance are *History!*

SCSI performance at **IDE** *prices.*



ACARD ARS-2012E Mirror Smart
Standalone SCSI-SCSI RAID1 controller. Built-in RAID on Chip ACARD **SCSIDE** engine. Uses ATA-33/-66/-100 hard drives. Supports hot swap and instant rebuild. High availability for mission critical applications. SCSI-UW interface.

ACARD AHARD RAID 66 PCI Card (Macintosh)
High performance PCI 32-bit bus master adapter with true RAID0 (disk striping) support . Connect up to 4 ATA-66 HDD.



ACARD ARS-2000 Bridge Smart
Ultrawide SCSI-IDE Bridge. High speed ACARD on-chip RISC microcontroller. Uses ATA-33/-66/-100 hard drives. Simple installation. Full Ultrawide SCSI target features support.
ARS-2000IW (PC)
ARS-2000FW (PC and Mac)

NEW PRODUCTS



ACARD AEC6712UW PCI SCSI-3 Host Adapter
Up to 40MB/sec. PCI plug and play, Int13h support. Supports 32bit PCI bus master. 1 int. wide, 1 ext. wide connectors, 1 int. narrow connector. Upgradeable Flash BIOS.

We distribute products by Acard Technology, Archos, Contour Design, Eskape Labs, EZQuest, GeeThree, iREZ, Kensington, Lantech, New Motion, QuDi, Sonnet and Targus.

MacSense australia

81 Buckland Street, CHIPPENDALE NSW 2008
phone: (02) 9319 2288 fax: (02) 9319 2688
sales@macsense.com.au

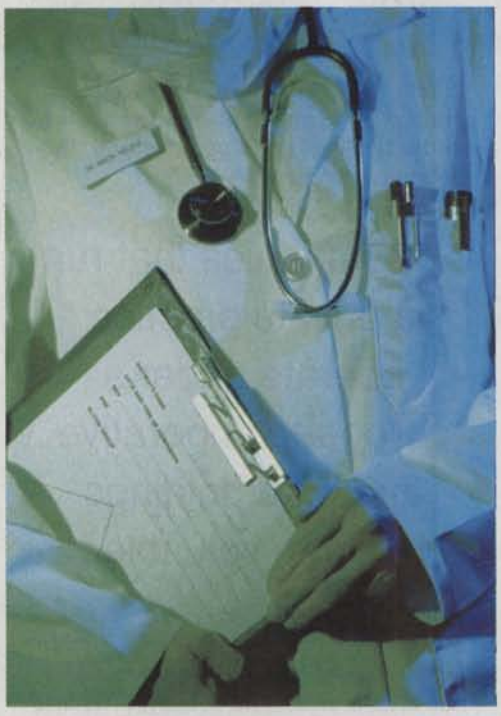
Cohen is frustrated by the sluggishness of Australia's response to the benefits ehealth can deliver in patient outcomes and cost savings. He backs up Yellowlee's description of a public hospital system which accumulates bags of misplaced patient records each day.

Hospitals are among the largest institutions in the country and have developed some very complicated bureaucratic processes. "Computers save a lot of money in administration, billing, patient management and drug ordering," Cohen said. "For one visit to hospital, there are 10 to 15 parties that need bills paid. Hospitals employ people specifically to track these down when it could all be done in minutes."

IBA runs an electronic claiming and billing network that reaches 7,000 doctors, hospitals, clinics, insurance companies and government bodies. Each year, the network handles 50 million ecommerce transactions, worth $1.5 billion.

IBA has provided IT services to 36 public hospitals and 120 private hospitals in Australia, but according to Cohen, "Australian hospitals are well behind." There are no universal standards set by government, so hospital systems can exchange information. "This uncertainty is clearly holding the industry back," he said. He points to the UK, where the government has allocated $2.6 billion to set up a coordinated electronic health system.

"Many modern systems talk to each other, but unfortunately a lot of systems are legacy systems that were developed on a standalone basis." He compares



Australia's hospitals to the old railroad networks. Each state built its own rail system with tracks that didn't link up. "It's stupid, but that's the situation that exists," he said.

"Many different government bodies are independently doing reports, but it has not been done on a coordinated and funded basis. It's really ad hoc." Cohen believes there are a number of political agendas being played out in the debate over ehealth, and security and privacy issues are often used to "stir the pot". He regards the idea that patient records will be in dire threat if stored electronically as misleading. "In the current system, there's no real security. If records are stored electronically, they are a lot safer."

IBA has set up electronic health record projects for the Singapore and Australian defence forces with some interesting results. In Singapore, the armed forces wanted a paper backup on hand in case the database failed, but soon decided that the electronic database was superior.

According to Cohen, doctors in the Singapore project discovered they could identify outbreaks sooner by conducting a statistical analysis on symptoms. This allowed doctors to detect possible health threats much earlier. "The application of this is massive." Cohen sees the project as a prototype of what could be introduced for the whole Australian population.

These databases could be used to track outbreaks such as Ross River fever in Australia, or mad cow disease in Britain. Epidemiologists could use the database to understand more common epidemics such as influenza or food poisoning, and the rate of severe asthma attacks and how this relates to weather patterns and crop spraying. However, there are still major privacy and security issues to overcome.

IBA worked with the framework and standards set by each defence force. Cohen acknowledges any move to an Internet-based electronic health record scheme requires a lot of work and coordination.

"We need to go through various stages first, starting with private intranet or smartcards, rather than moving straight to pure Internet," he said. He sees Internet-based systems as still several years away. "It's a desirable objective and we will all benefit from it, but it needs to be done on a coordinated basis between federal and state governments willing to allocate funding. The problem is that there is no driver."

Medical intervention

However, for ehealth to work, the changes must go even further. According to Yellowlees, some electronic systems have proven inconvenient and many health workers don't use them. "There is a culture that needs to change," he said.

If you can't beat it, join it

Pop psychology has made it to the Web — with an interesting twist.



Child psychologist Dr John Irvine has moved his popular advice online. 'Dr John' is the presenter of a long-standing national syndicated radio show on childhood development.

Now he runs an Internet counselling service through filtered Internet service provider Kidz.net. However, his online patients are not the usual crowd he encounters at his Gosford clinic.

Dr John said he suspects some of the emails he receives are actually written by parents who want to ask him questions about their children's behaviour.

In the face of a professional, it seems it may not be as easy to disguise one's true identity as many surfers, safe in their homes, seem to believe. "Parents' words aren't kids' words," he said, explaining that parents were basically searching for reassurance about their parenting and whether they were doing the right thing.

He said many are more comfortable with the "secure and anonymous" environment offered by the Internet.

There are many issues surrounding delivering counselling services online and Dr John is careful to advise children to talk to their school counsellor if there is a problem. "Advice has to be carefully couched," he said. "But if I want to make a difference, I have to go where people are." He said that right now the Internet is available mainly to "North Shore kids". However, with wider use of the Internet, he hopes to "get into where the action is".

Technology is widely used by doctors; about 70% of GPs use a PC at work. "An awful lot of doctors use computers, but relatively few use them beyond billing and writing prescriptions. Once the technology improves, I am confident doctors will use them more," Yellowlees said.

Yellowlees acknowledges that some doctors will never adopt new technology, and in his view, these individuals could find themselves left out in the cold. Research by Forrester suggests the Internet has empowered consumers, who are now able to use the Internet to choose not only their treatment, but their doctor.

In NSW, patients can check waiting times for public hospital treatment and choose their doctor or hospital based on availability. Patients can compare median waiting times by procedure, hospital and doctor. However, the Web site (www.health.nsw.gov.au/waitingtimes) warns people "not to draw any particular conclusions about the practices of individual practitioners or demand for services". The NSW government indicated the project is aimed at providing more choice for patients.

Internet-connected patients can also learn more about their health and treatment options from the huge number of health information Web sites. However, the ACA has warned consumers to be cautious about the quality of information on some health Web sites. In response to the demand for a reputable source of local health information, the federal government set up an online health information database called HealthInsite.



The Internet has provided easier access to health information, but it has also provided better access to prescription medication such as Viagra and psychotropic drugs. The United Nations wants to crack down on these illegal online pharmacies.

Similarly, doctors wish to avoid a do-it-yourself culture to health treatment. There is scope to open up the conservative and closed culture of the medical profession, but there are dangers in ripping it down.

The upcoming generation of doctors are trained to take ehealth for granted. Sharmila Dissanaike graduated from the University of Sydney Graduate Medical Program last year. "IT in medicine is huge at the moment. Medical informatics is actually a separate degree program in lots of places, with some doctors choosing to make a career in the area." New Internet-based courses and online testing are familiarising students with the Web.

"As for patient records, most lab test results are now obtainable on the computer at most major and even smaller hospitals," she said. "A statewide database of patient records would make it easier when patients move around between hospitals."

The medical profession is slowly accepting new technology. "The newest thing is using Palm computers that have software for tracking your patients. You can beam this information using an infra-red port to others or to a printer — that's not yet routine in Australia, but it's definitely the way of things to come."

QuDi

QUDI Pocket Hard Disk Series

Portable!
Flexible!
Expandable!

bring your office with you...

QuDi 125L and QuDi 125D

Convenient caddy can utilise any 2.5 inch ATA hard disk drive. plug and play, hot swappable, removeable storage. Optional universal power supply. IEEE-1394 Firewire interface transfers data at 14MB/sec. **125L** - features piggyback electronics bay for super portability.

125D - toploading fully enclosed mechanism for your desktop.

Requires Windows 98/2000 or Mac OS9.



QuDi 125D

QuDi 225IS Disk Mirroring System

The fully plug and play hot swappable 225IS uses any (pair of) 2.5" ATA hard disks.The disks can be configured as two individual disks or a RAID1(mirrored) system. With a standard ATAPI interface, the QuDi 225IS uses the same caddy as the Pocket Hard Disk and occupies a single half height 5.25inch drive bay.

NEW PRODUCTS



Features include: password protected motorised disk ejection system, backlit LCD status display, disk failure alarm and automatic online rebuilding. OS independent - can be used with Windows 95/98/NT/2000, Unix, Novell and MacOS.

We distribute products by Acard Technology, Archos, Contour Design, Eskape Labs, EZQuest, GeeThree, iREZ, Kensington, Lantech, New Motion, QuDi, Sonnet and Targus.

MacSense australia

81 Buckland Street, CHIPPENDALE NSW 2008
phone: (02) 9319 2288 fax: (02) 9319 2688
sales@macsense.com.au

ORDER ONLIN

Kodak mc3

MP3 MUSIC, VIDEO AND STILL PICTURES: NEW KODAK mc3 GIVES YOUTH THE FUNKIEST WAY TO CONNECT WITH THEIR FRIENDS

MP3 music, Video and Still Pictures. New Kodak mc3 Gives Youth The Funkiest Way To Connect with Their Friends

Kodak designed the mc3 specially to produce files that can be transmitted simply and quickly via email. Users can combine their video and digital pictures, add music and captions, and then email it or share it on the web. The mc3 comes with its own Kodak mc3 USB Dock, which the mc3 sits on for downloading pictures and movies. The easy-to-use software self-loads when the mc3 is placed in the mc3 USB Dock, making picture transfer incredibly easy and quick for the consumer.

Featuring a full-colour reflective LCD screen, users can preview or review their video and pictures easily and accurately in outside light, making the unit perfect for outdoor activities and sports, such as skateboarding or snowboarding.

Included in the Box

- Kodak mc3 with wrist strap
- Kodak mc3 USB Camera Dock
- 16Mb CompactFlash card
- headphones
- disc with software

Just Arrived!!!

UNDER $500
Check website for latest price



Palm Vx NOW IN STOCK - SAVE OVER $170!

If you're looking for the sleekest device on the market, look no further than the Palm Vx™ organizer, weighing in at just 114 grams.

Price: **$699**

Web Search Code: 28315



Palm m100

If the word "busy" doesn't begin to describe your life, the Palm™ m100 handheld can help you simplify things. This affordable handheld keeps track of all of life's little details and gives you the flexibility to add business productivity tools, games and Internet access.

Price: **$309**

Web Search Code: 42403



Palm IIIC

Manage all your information in colour with one of the industry's smallest colour handhelds. Ultra slim & powerful with PC and Macintosh compatibility

Price: **$649**

Web Search Code: 28314



Palm IIIxe

The Palm IIIxe handheld is the perfect combination of flexibility and power. Carry all your important information and connect with your PC at the touch of a button.

Price: **$469** Web Search Code: 51302

Compaq IPaq Colour Pocket PC

Compaq has designed the iPAQ Pocket PC from the ground up to give customers the internet, information, content and access to their business and personal lives at any given time, in any given place. Use the PC Card Expansion Pack to connect to email or the Internet, and allow critical information to be at your fingertips at all times.

Price: **$1,145**

Web Search Code: 42551



Compaq Ipac Mono Pocket PC

The Mono has real functionality and offers a familiar Windows interface.

Price: **$865** Web Search Code: 52860

Psion Revo 8MB

If you're juggling social connections, business commitments and the totally unexpected, pick up a Psion Revo™. Psion Revo™ is designed to fit right into your pocket — and right into your life. It offers agenda, contacts manager, email on the move, jotter, PC sync and lots more to stay ahead of a busy life.

Price: **$719** Web Search Code: 44204



Psion Revo 5MX

Palmtop computer with excellent organizer and communication features. Features: 16 inch, backlit, touch sensitive screen and patented laptop-style 'expanding' keyboard

Price: **$1,039** Web Search Code: 44205



Psion Revo 7 Series

Compact and lightweight portable computing solution. Features: Psion organizer, superior connectivity and office software. Runs for 8.5 hours on a typical operation.

Price: **$2,079** Web Search Code: 44206



HP Jornada 545

As a busy professional, you know every day can be a challenge. The Jornada 540 Series Colour Pocket PC has everything you need to effortlessly juggle the details – and have fun while you're doing it. All in a slim, lightweight package that's a perfect fit for your lifestyle. Includes 16MB RAM.

Price: **$899**

Web Search Code: 34688



HP Jornada 548

Comes with 32 MB PLUS Microsoft Windows for Pocket PC and Microsoft Pocket Outlook software.

Price: **$1,110** Web Search Code: 35378

HP Jornada 720

Small and light, the HP Jornada 720 Handheld PC delivers the power, speed, and flexibility you need while on the go. Packed with memory, it lets you run the applications you need, as well as send and receive e-mail and use the Internet to do business away from your office.

Price: **$1,749** Web Search Code: 51197

Xircom Rex 5

The Rex is a PC companion that enables users to access data anywhere. High contrast screen resolution and easy connectivity. Stores up to 6000 separate data entries.

Price: **$165** Web Search Code: 22504

Xircom Rex 3

Stores up to 3000 entries.

Price: **$66**

Web Search Code: 41333



Home | Computers | Software | Electronics | Mobile Phones | Games

Guaranteed Lowest Prices.

We guarantee Australia's lowest prices, or at the very least, we'll match any genuine advertised price from any authorised reseller. Check our website for the latest prices.

Returns Policy.

If there is a fault with any product or you're not completely satisfied with a purchase, we are more than happy for you to return it. In fact, we ourselves will pay for the product(s) in question to be returned.(conditions apply.)

Payment Options.

We're pretty flexible: 6 months interest free instantly available (to approved customers), credit card, business account or rent. Whichever suits you best.

Shop around, buy from us.

E OR BY PHON E-STORE

COMPAQ LOWEST PRICE IN AUSTRALIA



$1,949
Websearch Code: 43500

Compaq Armada 100s

Impressive new portable designed for growing business users. Includes AMD K6-2+ 533MHZ, 32MB, 5GB Hard Disk Drive, 24X CD-ROM, fixed 1.44MB FDD Integrated Mini PCI V.90 56K modem with AC97 link, 12.1" Display PLUS Windows 98 SE, Microsoft Word 2000 & Norton AntiVirus.



Compaq Presario Desktops

The value-packed Presario 5000 series features powerful Intel Celeron and Pentium III processors. These PCs sport a space-saving microtower design that houses either CD-RW/40X max CD-ROM drive or 8X DVD-ROM drive on selected models.

Desktop Range	Price	Web Search Code
PRESARIO 5000 C633+15" MONITOR	$1,719	54025
PRESARIO 5000 C633+17" MONITOR	$1,899	54026
PRESARIO 5000 C633+19" MONITOR	$2,249	54027
PRESARIO 5000 D700 15" MONITOR	$1,859	54028
PRESARIO 5000 D700+17" MONITOR	$2,045	54029
PRESARIO 5000 D700+19" MONITOR	$2,415	54030
PRESARIO 5000 D750+15" MONITOR	$2,139	54031
PRESARIO 5000 D750+17" MONITOR	$2,325	54032
PRESARIO 5000 D750+19" MONITOR	$2,695	54033
PRESARIO 5000 P866+15" MONITOR	$2,610	54034
PRESARIO 5000 P866+17" MONITOR	$2,789	54035
PRESARIO 5000 P866+19" MONITOR	$3,159	54036
PRESARIO 5000 PIII650 15" MONITOR	$2,029	40200
PRESARIO 5000 PIII650 15" PRINTER	$2,219	40203
PRESARIO 5000 PIII650 17" MONITOR	$2,199	40201
PRESARIO 5000 PIII650 17" PRINTER	$2,455	40204
PRESARIO 5000 PIII750 15" MONITOR	$2,595	40209
PRESARIO 5000 PIII750 15" PRINTER	$2,785	40212
PRESARIO 5000 PIII750 17" MONITOR	$2,769	40210
PRESARIO 5000 PIII750 17" PRINTER	$2,959	40213
PRESARIO 5000/633+17"+PRINTER	$2,099	54145
PRESARIO 5000/633+19"+PRINTER	$2,290	54146
PRESARIO 5000/D700+15"+PRINTER	$2,055	54147
PRESARIO 7000 PIII4.1G/128/75/CDRW	$6,320	53556
PRESARIO 7000 PIII800 15" MONITOR	$3,799	40215
PRESARIO 7000 PIII800 15" PRINTER	$3,995	42780
PRESARIO 7000 PIII800 17" MONITOR	$3,975	40216
PRESARIO 7000 PIII800 17" PRINTER	$4,165	40218
PRESARIO 7000 PIII933 15" MONITOR	$4,659	40220
PRESARIO 7000 PIII933 15" PRINTER	$4,849	40223
PRESARIO 7000 PIII933 17" MONITOR	$4,835	40221



Compaq Presario Notebooks

The Presario Notebook series introduces notebook users to a new level of customisation and flexibility. Presario Notebooks have been designed with the aim to offer users the ability to customise their notebook to meet their individual needs.

Notebook Range	Price	Web Search Code
PRESARIO 1200 12XL-305+CARRY CASE	$2,745	54063
PRESARIO 1400 14XL-350 PIII700/128	$4,195	52931
PRESARIO 1700 17XL-364 PIII650/64/10	$4,015	52932
PRESARIO 1700 17XL-376 PIII750/128/20/	$5,379	52933
PRESARIO 800 80XL300 PIII650/128/10/	$4595	52934

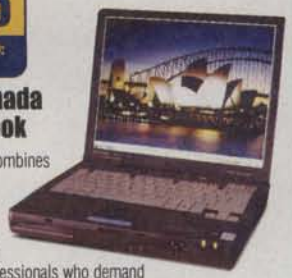
$1,998
Websearch Code: 54135



Compaq DeskPro SB

Now you can have the computing power and performance your business needs, as well as receiving exceptional value for money. This unit includes Pentium III 800MHz, 64MB, 20GB Hard Disk Drive, 48x CD-ROM, 56K Modem, 15" monitor and Windows98.

$4,325
Websearch Code: 54137



Compaq Armada E500 Notebook

The Armada E500 combines the ultimate configuration flexibility with powerful expandable performance for professionals who demand an all-in-one solution. This unit includes Pentium III 600MHz, 256MB, 6GB Hard Disk Drive, DVD, 56K Modem, 14.1" Display and Windows98.



Compaq Neoserver

The Neoserver offers simple network solution without the usual technical complexity of other servers. This unit includes Celeron 500MHZ, 128KB cache, 64MB, 13GB Hard Disk Drive, 17GB EIDE backup Hard Disk Drive PLUS a Compaq developed in-house Operating System designed by SCO

$2,699
Websearch Code: 28480

Health& Fitness | Music | Kitchen | Laundry | Home&Lawn Care | Climate Control

Security.
Using the latest and tightest encryption technology available, we guarantee our site is 100% secure. By the way, we don't keep a record of credit card numbers.

Delivery.
Like everything else with E-Store, you'll find delivery fast, safe and completely traceable on-line.

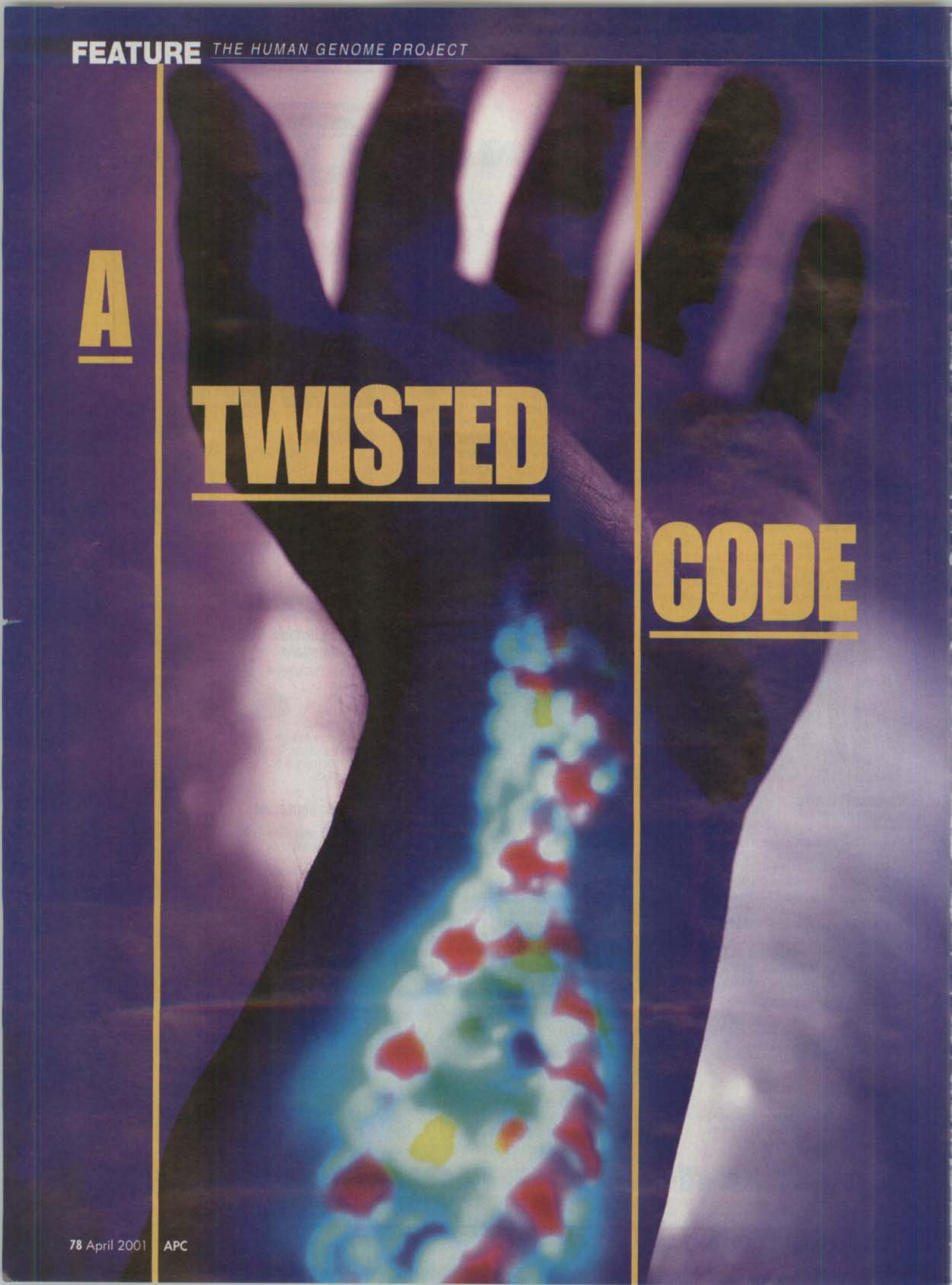
Phone & Fax Orders.
Call direct on **1800 678 673** or fax us on **(02) 9808 8565** for a quote.

E-STORE

www.estore.com.au **1800 678 673**

Pricing: All pricing includes sales tax. Pricing & product details listed are current at the time of printing, however pricing often alters and in a lot of cases is lower than listed. For complete product details & pricing on over 120,000 products please check www.estore.com.au, or call 1800 078 673. E&OE.

A TWISTED CODE



The Human Genome Project has been hailed as revolutionary, and its completion has been described as the greatest scientific event in history. So far, it has played on some of our most conventional ideas, but can it really reveal the 'book of life'? ***Suzanne Fraser*** *reads between the lines.*

The Human Genome Project (HGP) has attracted an enormous amount of coverage in the media, most of which has elevated it to the status of a sacred mission. Media attention peaked in June last year, when it was announced that the human genome had been sequenced three years ahead of schedule. However, there are many who question the value of the project. Scientist and critic Ruth Hubbard has said that its scientific significance "is as questionable as was the scientific significance of putting a man on the moon. But it has a similar heroic appeal".

With its promise of eradicating disease and ageing, and discovering what it is to be human, the flood of interest the research has inspired is unsurprising. The project marries perennial human desires for health and longevity with powerful and familiar assumptions about the inheritance of physical and psychological characteristics. The combination lends the HGP enormous authority, but it has also inspired controversy.

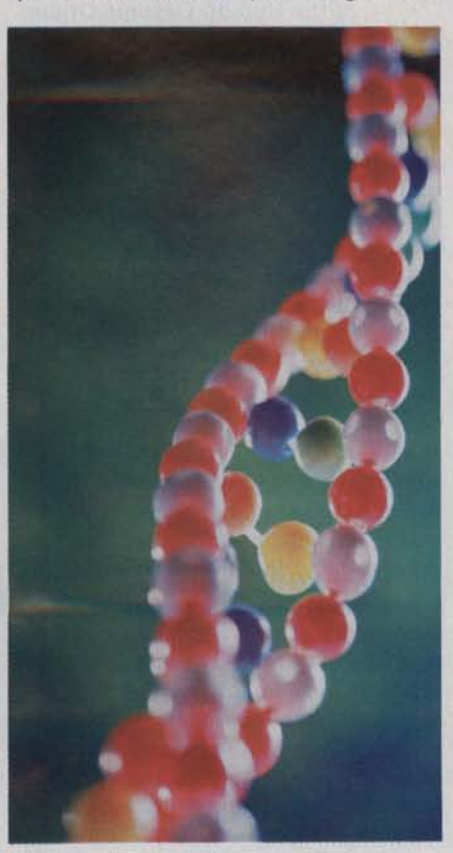
A variety of ethical and social questions have surrounded the project since its early days. However, the most fundamental issue of whether it is possible to say that human beings are determined by their genes, and what it means to say that, has remained largely off the agenda. This is partly because the very assumption that humans are the product of genetic determinism is the reason the project has garnered such intense public interest and support.

What is the HGP?

The HGP was launched in 1990 by a consortium of public research institutions. It began as part of a 12-year program worth $US3 billion and included 18 countries. Funded by the US Department of Energy and National Institute of Health, the project attracted a grant of $US500 million. Its first goal was to map the estimated 100,000 to 200,000 genes in the genomes of five people.

What is the genome? Our bodies contain about 100 trillion cells. The nucleus of each cell, except for the egg and sperm cells, houses 46 chromosomes arranged into 23 pairs. Egg and sperm cells house 23 individual chromosomes that combine on fertilisation to produce the full complement of 46. This is how our genes are passed on to our children.

The chromosomes are made of DNA (deoxyribonucleic acid), which is composed of four chemicals or bases: adenine (A), thymine (T), guanine (G) and cytosine (C). These are joined together to



▲ The double helix

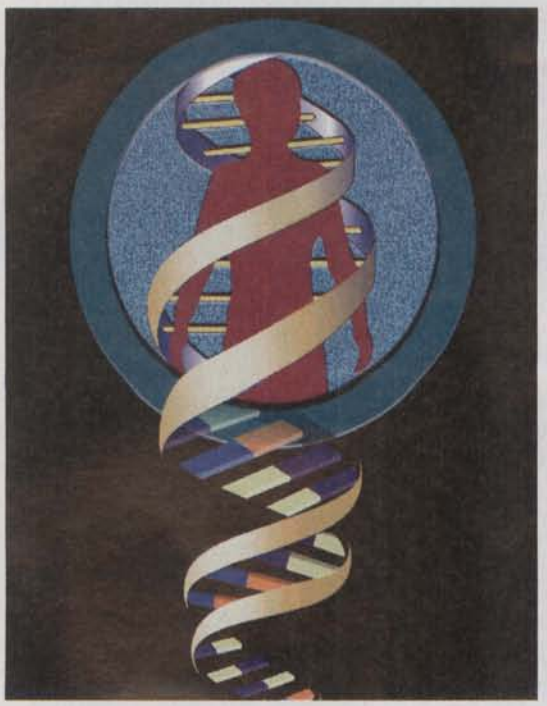
form a twisted structure known as the 'double helix'. The order the bases are arranged in makes up a code that tells the cell which protein to make. The human genome contains about 3.1 billion base pairs of these chemicals, and they are what the project has sought to map and sequence. To do this, the order in which the four bases appear on the chromosome is determined and recorded in a long string.

The mapping of the human genome began as a single project, but it split into two in 1997 when Craig Venter, a researcher with the HGP, left to establish a privately funded company called Celera Genomics. Venter defected because he wanted to use a different approach to complete the sequencing faster than originally planned.

The method used by the government-funded project involved five different labs. Each lab took fragments of the genome about 150,000 bases long, analysed them and pieced them together. Celera's approach was to sequence smaller pieces of the genome and use supercomputers to reassemble them. This proved to be a faster route to obtaining a draft sequence. However, a high-quality sequence is still being completed. Venter put a positive spin on the rift that caused him to break from the HGP and set up Celera. "Some people say that maybe it's not so unfortunate because the controversy has made everybody more ingenious," he said.

In Australia, only one lab participated in the sequencing. According to Grant Sutherland, head of the participating team at the Adelaide Women's and Children's Hospital, the government was not interested in providing funding when the project was being set up in the late '80s. The Adelaide team sequenced only a small fragment of the genome: 2 million nucleotides on a chromosome (number 16) that makes up only 3% of the entire genome.

"I think it's regrettable that Australia distinguished itself by being one of the few industrialised countries in the world not to have an organised genomics program since the early 1990s," he said when the announcement was made that sequencing was complete. Since then, the National Health and Medical Research Council has allocated $4.2 million to medical genomics research, and the University of Queensland has decided to build a $105 million institute of molecular biology.



▲ The logo of the Human Genome Project: the fundamental issue is whether it's possible to say human beings are determined by their genes.

In Sutherland's opinion, the completion of the sequencing is the greatest scientific event in history. He is clearly a fan of the project, as are many others — scientists and lay people alike. This is to be expected, as the project has promised some spectacular advances. It is believed that the research will lead to the discovery of ways of diagnosing genetic diseases so that foetuses can be screened in the womb, and eventually, genetic disorders can be corrected before birth. It also promises genetic therapies for incurable genetic diseases. For example, researchers are attempting to cure cystic fibrosis with gene therapy. A virus containing 'healthy' genetic material is sprayed into the nostrils of the sufferer and attaches itself to the inside of the nose and lungs. The virus reproduces itself by inserting its genetic material into nearby cells. In theory, this means the corrected gene is also inserted, altering the function of the cells to eradicate the disease. So far, despite a few false alarms, this gene therapy research has been unsuccessful.

The project's aim is to pinpoint which genes do what, so there are also expectations that all kinds of physical and psychological characteristics will be attributed to particular genes, and that these will eventually be alterable by genetic manipulation and therapy. Research into genes for ageing, obesity, alcoholism, schizophrenia, intelligence and homosexuality is already underway.

The ethics of the HGP

The HGP appeals to those interested in the idea of producing 'designer' children through genetic selection and manipulation. This is a source of concern for many people. They see this kind of manipulation as 'playing God', or as creating even greater social inequality than already exists.

It is believed that as genes are identified for more and more traits, social pressure to screen out these traits could increase. Will society become even less tolerant of difference than it is now? Will Down syndrome, left-handedness, homosexuality or bipolar disorder (manic depression) be screened out, leaving those with these characteristics more isolated or open to discrimination?

Justice Michael Kirby, a member of the Ethics Committee of the Human Genome Organisation and of the International Bioethics Committee of UNESCO takes these fears very seriously. "The history of the 20th century has been one of unrelenting, irrational and unwarranted discrimination. Such discrimination is still going on. The grounds for discrimination are frequently based in the genome: a person's race, skin colour, gender, disability and sexual orientation," he said.

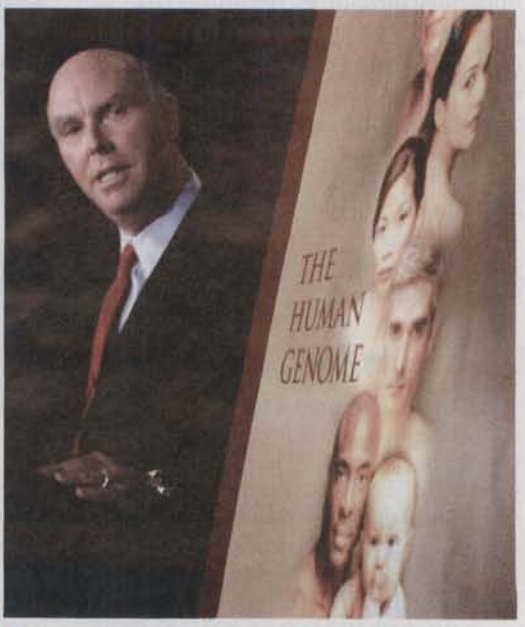
In November 1997, UNESCO adopted the Universal Declaration of the Human Genome and Human Rights, and along with it, the principle that "No-one shall be subjected to discrimination based on genetic characteristics that is intended to infringe or has the effect of infringing human rights, fundamental freedoms and human dignity." It remains to be seen whether UNESCO's declaration will have any impact on the way genetic information is used.

The HGP's Web site states with evident pride that it is the first large scientific research project to address the ethical, legal and social implications of its work. A variety of issues are being considered by researchers, some of which relate to privacy. If individual human genomes can be sequenced and interpreted, can they become the basis for discrimination? Some fear that employers will insist on genetic screening of workers and new candidates for jobs, and that genetic screening will become mandatory for health and life insurance. Will those with a genetic predisposition to cancer or heart disease be expected to pay higher premiums?

In August last year, Dr Trevor Mudge, the vice-president of the Australian Medical Association, called for a moratorium on the use of genetic testing for insurance purposes. He argued that the tests are not reliable and that they compromise individual privacy by uncovering information about the relatives of test subjects. Mudge's call followed an announcement by the ACCC that to ban genetic testing would be detrimental to competition and would hinder the lowering of premiums for those without evidence of genetic illnesses.

In November, compulsory genetic testing of life insurance applicants was banned in Australia for two years to give a federal government inquiry time to sort out the privacy and discrimination issues involved.

Another important area the project flags for ethical consideration is gene patenting. Many companies, Celera included, have applied for patents on fragments of the human genome. So far, Celera has applied for patents on at least 6,500 genes. There are many questions to be answered. Who should own genetic material and genetic sequences? Can human genes be patented? This is a pressing issue as some small ethnic groups such as the Tongans and the Norfolk Islanders have already sold the rights to their gene pools to health researchers.



▲ Celera Genomics president Craig Venter speaks at a Washington news conference to discuss genome research findings.



IBM

YOU PROVIDE THE BUSINESS GROWTH

WE'LL SUPPLY THE SOLUTIONS

start here

THE IBM THINKPAD® A21e

$3,899*3

WITH FREE* MEMORY UPGRADE & 8MB USB MEMORY KEY

MARCH SPECIAL OFFERS INSIDE

Offers end 31/03/01 or whilst stocks last and are available from IBM.

ebusiness tools

IBM ThinkPad Notebooks



start here

A21e	T21	A21m	X20
Model Number 2628 - JXA **Just the essentials for mobile computing.** • Mobile Intel® Celeron™ processor 600MHz • 64MB RAM, 10GB HD • **15" TFT Display** • 24x CD-ROM drive • 56K Modem Integrated with 10/100 Ethernet Card • Microsoft® Windows® 98 • Lotus SmartSuite® • 1 year limited warranty[1] Offer Code: INO4	Model Number 2647 - 2BA **Thin and light – high performance.** • Mobile Intel® Pentium® III processor 750MHz • **128MB RAM**, 10GB HD • 13.3" TFT Display • 24x CD-ROM drive • 56K Modem Integrated with 10/100 Ethernet Card • Microsoft® Windows® 98 • Lotus SmartSuite® • 3 year limited warranty[2] Offer Code: INO6	Model Number 2626 - GXA **Solid business performer for mainstream mobile computing.** • Mobile Intel® Pentium® III processor **800Mhz** • 64 MB RAM, 20 GB HDD • 14.1" TFT Display • 8x DVD • 56K Modem Integrated with 10/100 Ethernet Card • Microsoft® Windows® 98 • Lotus SmartSuite® • 1 year limited warranty[1] Offer Code: INO3	Model Number 2662 - 36M **Extra-light portability.** • Mobile Intel® Pentium® III processor 600Mhz • 128 MB RAM, 20 GB HDD • 12.1" TFT Display • **Weighs 1.6 kg[31]** • 56K Modem Integrated with 10/100 Ethernet Card • Microsoft® Windows® 98 • Lotus SmartSuite® • 3 year limited warranty[2] Offer Code: INO5
$3,899*3 Lease from $36.89**3 per week	**$4,799*4** Lease from $44.30**4 per week	**$4,899*5** Lease from $45.22**5 per week	**$4,999*6** Lease from $46.14**6 per week

choose this

Warranty Upgrades

- A21e, A21m – upgrade to a 2 year Limited Onsite for just $232*32
- X20, T21 – upgrade to a 3 year Limited Onsite warranty for just $361*33

ThinkPad T Series
BusinessWeek
December, 2000
"The Best Product of 2000"

ThinkPad T21
Barron's Online
November, 2000
"Top Three Notebooks"

get these options

Purchase any of the following options from IBM:

- 72W AC Adaptor $175*26
- ThinkPad Port Replicator $309*27
- High Rate Wireless LAN PC Card $399*28
- High Rate Wireless LAN Access Point $1,379*29
- USB Memory Key $99*43
- UltraPort USB Digital Camera $199*44
- IBM Microdrive 340MB $569*45

bonus*18

Purchase one of the selected IBM ThinkPad A series*18 from IBM, and receive an 8MB USB Memory Key and 64 MB RAM upgrade for no additional charge. **(Normally $234*18 RRP.)**

add this

MYOB® or Quicken	Lexmark Printers	Wireless Start-Up Offer
Choose either of these great value accounting software packages for your business.	Choose the Lexmark B/W laser printer for just $549*20 (Normally $649 RRP) or the Z12 colour inkjet printer for just $119.*21	Wireless Start-Up Offer – 2 Wireless Cards and Access Point $1,899.*30 (Normally $2,177 RRP)
$120*19	**from $119*21**	**$1,899*30**

IBM recommends Microsoft® Windows® 2000 Professional for Business

IBM NetVista Desktops



start here

A20	A20	A40	X40 All-In-One
Model Number 6266 – G2A + 633 102S **The IBM NetVista A20 gives you the flexibility you need at an impressively low price.** • Intel® Celeron™ processor **700MHz** • 64MB RAM, 10GB HD • 48x CD-ROM drive • 15" CRT monitor • 10/100 Ethernet Card • Microsoft® Windows® 98 • 3 year[7] limited warranty[8] Offer Code: INO1	Model Number 6266 – N3A + 633 102S **Packed with powerful, proven technology that's easier than ever to use, expand and service.** • Intel® Pentium® III processor **800Mhz** • 64 MB RAM, 10 GB HDD • 48x CD-ROM • 15" CRT monitor • 10/100 Ethernet Card • Microsoft® Windows® 98 • 3 year[7] limited warranty[8] Offer Code: INO2	Model Number 6578 – NCA + 633 102S **Fast, reliable network connections. Easy deployment and simple, effortless use.** • Intel® Pentium® III processor 800Mhz • **128 MB RAM**, 20 GB HDD • 40x CD-ROM • 15" CRT monitor • 10/100 Ethernet Card • Microsoft® Windows® 98 • 3 year[7] limited warranty[8] Offer Code: INO8	Model Number 6643 – 23A **Experience the flexible, easy-to-use, ultracompact design of the IBM NetVista all-in-one system.** • Intel® Pentium® III processor 866MHz • 64MB RAM, 30GB HD • 24x CD-ROM drive • 15" Integrated TFT Flat Panel monitor • 10/100 Ethernet Card • Microsoft® Windows® 98 • **All-In-One design** • 3 year[7] limited warranty[8] Offer Code: INO7
$1,549*[9] **Lease from $15.73**[9] per week**	**$1,749*[11]** **Lease from $17.76**[11] per week**	**$1,948*[12]** **Lease from $19.78**[12] per week**	**$4,499*[10]** **Lease from $42.57**[10] per week**

choose this

Warranty Upgrades

- A20 – upgrade to a 3 year Limited Onsite warranty for just $139*[34]
- A40 – upgrade to a 3 year Limited Onsite warranty for just $83*[35]

NetVista X40
PC World
September, 2000
"Best Buy In Business"

NetVista X40
PC Magazine
August, 2000
"Innovative PC Award"

get these options

Purchase any of the following options from IBM:

- 64MB Memory for an extra $99*[23]
- 128MB Memory for an extra $199*[24]
- **Upgrade to a 17" monitor for only an extra $100*[25]**
- Firewire Card for an extra $239*[46]
- 16x DVD ROM from $350*[47]

add this

MYOB® or Quicken	Lexmark Printers	Quicknowledge Training Packs
Choose either of these great value accounting software packages for your business.	Choose the Lexmark B/W laser printer for just $549*[20] (Normally $649 RRP) or the Z12 colour inkjet printer for just $119.*[21]	Choose from a range of Installation and Training Packs priced from $54.95.*[48]
$120*[19]	**from $119*[21]**	**from $54.95*[48]**

IBM

IBM @server



start here

xSeries 200	xSeries 220	Netfinity 4500R	xSeries 135
Model Number 8478-41X	Model Number 8645-31X	Model Number 8656-4RY	Model Number 8654-1XX
Entry-level IBM e-server. The processing power small businesses need at minimum downtime.	**Leading technology offering powerful performance in a small package.**	**This compact box offers excellent scalability and manageability.**	**Appliance Server preloaded with Web-serving software.**
• Intel® Pentium® III processor 800MHz • 256KB level 2 cache • 64MB 133Mhz ECC SDRAM • 15GB IDE hard Drive • 48x-20x CD-ROM • 1.44MB diskette drive • 10/100 Ethernet integrated • **3 year Limited Onsite warranty[13]**	• Intel® Pentium® III processor 866Mhz • 256KB level 2 cache • 128MB 133Mhz ECC SDRAM • 48x-20x CD-ROM • 1.44MB diskette drive • 10/100 Ethernet integrated • **3 year Limited Onsite warranty[13]**	• Intel® Pentium® III processor 866Mhz • 256KB level 2 cache • 128MB 133Mhz ECC SDRAM • Dual channel Ultra 160 controller • 48x-20x CD-ROM • 1.44MB diskette drive • 10/100 Ethernet integrated • **3 year Limited Onsite warranty[13]**	• Ultra thin 1U rack optimised • Intel® Pentium® III processor 800Mhz • 256KB level 2 cache • 256MB 133Mhz ECC SDRAM • 9.1GB SCSI hot swap Hard Drive • Appliance software stack • **3 year Limited Onsite warranty[13]**
Offer Code: INO9	Offer Code: INO10	Offer Code: INO11	Offer Code: INO12
$1,999*[14]	**$2,759*[15]**	**$4,999*[16]**	**$6,099*[17]**
Lease from $20.30[14] per week**	**Lease from $27.06**[15] per week**	**Lease from $46.14**[16] per week**	**Lease from $53.48**[17] per week**

choose this

Warranty Upgrades

- x200, x220 – upgrade to a 4 hour response, 3 year Limited Onsite warranty[50] for just $345*[36]
- x135, 4500R – upgrade to a 4 hour response, 3 year Limited Onsite warranty[50] for just $837*[37]

IBM Servers
Gartner Group, May 2000
IBM has "the most complete vision of the future of the Intel-based server market...The visionary leader in the Intel space".

get these options

Purchase these options from IBM for the x200 and x220:

- 9.1GB Ultra 160 Hard Drive for an extra $439*[41]
- 18.2GB Ultra 160 Hard Drive for an extra $699*[42]

Purchase any of the following options from IBM:

- IBM 20/40 GB DDS/4 4mm Tape Drive for an extra $1,815*[38]
- ServeRaid 4L Ultra 160 SCSI Controller for an extra $1,535*[39]

Buy two IBM xSeries 135 Servers and receive a 40% discount*[40] off the purchase price of a third xSeries 135 Server.

BUY IT **NOW**

ibm.com/au/yourbusiness/choice1

Call **1300 134 075** to buy now from IBM or to find your nearest reseller*
Monday to Friday 7.30am to 7.00pm EST

Please quote your offer code

IBM recommends Microsoft® Windows® 2000 Professional for Business

intel inside
pentium® III PROCESSOR

WHATEVER BUSINESS, WHATEVER SIZE, WHATEVER NEED, **THE SOLUTION BEGINS AND ENDS HERE**

If your business is experiencing growth, chances are you're experiencing a few IT growing pains along the way. It doesn't matter what size the organisation, or how well organised – planning for growth and finding the right solution can be difficult.

This guide to current offers from IBM is designed to make it a little easier. It's not just the latest technology of our notebooks, desktops and servers. Nor is it the competitive prices. It's the value you receive from IBM's warranties, discounts on software and peripherals, and special offers.

start here

Great prices on the latest technology from IBM. Whether you're after notebooks, desktops, servers or a combination of all three, you'll find very attractive prices across the entire range.

choose this

Buy any IBM computer and you're ahead when you purchase our extended service and warranties.

get these options

Once you've decided on the computer or computers you need for your business, for a limited time you can purchase a number of options, some at discounted prices – all at very competitive prices. Some of the options currently available from IBM are:

USB Memory Key $99*[43]



The IBM 8MB USB Memory Key is a solid state storage device that allows you to share data between any notebook or desktop system via the USB port without the need for a floppy disk.

UltraPort USB Digital Camera $199*[44]



The IBM UltraPort Camera II is an integrated camera designed to work with your new ThinkPad A, T or X Series. It can swivel 180 degrees to capture video or images.

IBM Microdrive 340 MB $569*[45]



The new IBM 340MB Microdrive weighs less than a AA battery and can hold 200 times more data or images than a floppy disk. Its small size and capacity make it ideally suited for applications requiring portability and having high data or image requirements.

add this

When you purchase an IBM computer, you can also take advantage of software and printer offers. Just look through and choose the options that are right for your business.

Lease here**

SuccessLease™ is a new leasing program for businesses and people working from home. It features the ability to trade up to new equipment during the lease as well as giving you more options at the end of the lease (including the opportunity to purchase at fair market value). Payments may be tax deductible[49] and you can arrange SuccessLease™ over the phone. Contact IBM for more details.

BUY IT NOW

Phone us. 1300 134 075

You can buy over the phone through our fast response **1300 134 075** number. If you need clarification on offers or would like to talk through your business needs call the number between 7.30am and 7.00pm EST, Monday to Friday.

To order phone **1300 134 075** and quote the code number(s) pertaining to your purchase.

Visit us. ibm.com/au

You have the option to buy from IBM over the web. It's easy, it's fast and it's available around the clock, combining IBM's established customer care culture with the easy access of the Internet.

To order the special offers* contained in this guide, or to view up to the minute offers*, simply go to **ibm.com**/au/yourbusiness/choice1. Offers end 31/03/01 or whilst stocks last.

"Call Me" Button

If you are looking through our website and you need advice on a purchase, just click on the "Call Me" button and an IBM Product Specialist will call you to assist.

See our IBM Business Partners*

You also have the option to talk face to face through our established IBM Reseller network. Finding your nearest IBM Business Partner* or Reseller is simply a matter of calling us on **1300 134 075.**

*Price is available to Australian residents purchasing from IBM during the period of the promotion and include GST. Individual reseller and Business Partner prices and products may vary. The term "Business Partner" is used informally and does not infer a legal relationship. Prices listed do not include options unless specified. Prices are subject to change, do not include delivery and are available until 31/03/01 or whilst stocks last. All purchases are subject to IBM's applicable standard terms and conditions which are available at **ibm.com.** ** Figures are based on 36 month lease agreement. Every lease is subject to credit approval. Conditions apply. A copy of the leasing rates, terms and conditions can be obtained from IBM sales representatives. Lease rates are current at the time of publication and are inclusive of GST, stamp duty and FID. SuccessLease is offered and administered in Australia by Flexirent Capital Pty Ltd (ABN 93 064 046 046), trading as "SuccessLease".

1. One year customer carry in or express repair warranty. IBM will collect and repair ThinkPads in Australia with a target repair time of two business days in IBM Service Centres plus transport time. IBM will cover the cost of the courier. 2. Three year (System battery – One year) customer carry in or express pick up. 3. Price is listed for model 2628-JXA. 4. Price is listed for model 2647-2BA. 5. Price is listed for model 2626-GXA. 6. Price is listed for model 2662-36M. 7. Includes three years parts and one year labour (onsite for first year). Response time is end of next business day. 15" monitor includes three years parts and labour customer carry-in repair. Contact IBM or your Business Partner for warranty conditions. 8. Warranty and Maintenance Options for Commercial Desktops include the attached IBM monitor. On-site service in normal business hours is performed between 9am and 5pm (local time) excluding weekends and public holidays. Onsite service is available within 100km of an Australian IBM Capital City Service Centre. 9. Price is listed for model 6266-G2A and E54 monitor 633102S. 10. Price is listed for model 6643-23A. 11. Price is listed for model 6266-N3A and E54 monitor 633102S. 12. Price is listed for model 6578-NCA and E54 monitor 633102S. 13. 3 year On Site warranty. On-site service in normal business hours is performed between 9am and 5pm (local time) excluding weekends and public holidays. Onsite service is available within 100km of an Australian IBM Capital City Service Centre. 14. Price is listed for model 8478-41X. 15. Price is listed for model 8645-31X. 16. Price is listed for model 8656-4RY. 17. Price is listed for model 8654-1XX. 18. Part numbers 19K4513 and 33L3071. ThinkPad A Series Memory Key & RAM Upgrade Offer is available on Model Numbers 2628-CXA, 2628-CWA, 2628-JXA, 2628-JWA, 2628-GXA, 2628-GWA. 19. Offer Software offered is MYOB FirstAccounts V3 OEM version from MYOB Technology Ltd. Software offered is QuickenQuickBooks V7 OEM version from Reckon Ltd. MYOB is a registered trademark of MYOB Technology Ltd. Quicken is registered in the US and other countries. Quicken is used under license by Reckon Ltd. 20. Part number 13E0033. 21. Part number 17E0058. 22. Part number 33L4618. 23. Part number 33L3071. 24. Part number 33L3073. 25. Part number 633203S. 26. Part number 02K6708. 27. Part number 02K8667. 28. Part number 09N9904. 29. Part number 22P4943. 30. Part numbers – 2x 09N9904 + 1x 22P4943. 31. Actual weight may vary depending on components and features installed. 32. Part number SPAC164. 33. Part number SPAC304. 34. Part number SPAC154. 35. Part number SPAC159. 36. Part number SPAC276. 37. Part number SPAC278. 38. Part number 00N7991. 39. Part number 37L6091. 40. Part number LINOFF1. Offer applies to model number 8654-1XX only. 41. Part number 00N8204. 42. Part number 00N8205. 43. Part number 19K4513. 44. Part number 19K4513. 45. Part number 19K4513. 46. Part number 19K5790. 47. Part number 10K3574. 48. Installation and training is based on Quicknowledge Corporation providing the service as a third party service provider to IBM. Installation and training is based on a one hour service call Australia wide. Service calls longer than one hour may be subject to an additional charge of $16.50 including GST. 49. Purchasers using this lease program are advised to obtain independent tax advice. 50. On-site service in normal business hours is performed between 9am and 5pm (local time) excluding weekends and public holidays with an average response time of four hours.

IBM, ThinkPad and the e-business logo are registered trademarks and NetVista and SuccessLease are trademarks of International Business Machines Corporation. Intel, the Intel Inside logo and Pentium are registered trademarks and Celeron is a trademark of Intel Corporation. Lotus SmartSuite is a registered trademark of Lotus Development Corporation. All other product or service names may be registered trademarks or trademarks of their respective companies. © IBM Australia Limited 2001 ABN 79 000 024 733. All rights reserved.

impiric/IBMPSG0436/IN1/APC

www.citysoftware.com.au

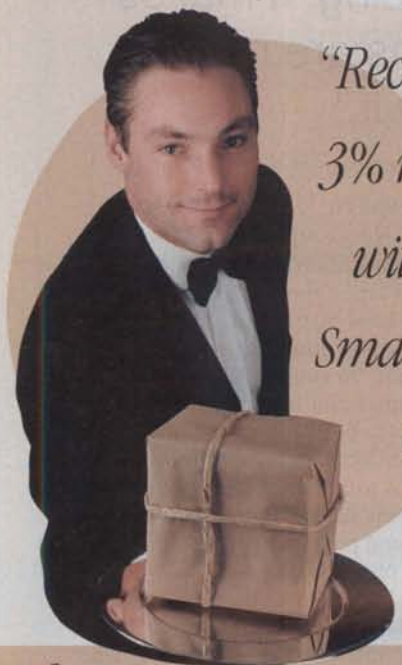
FAST, RELIABLE, COMPETITIVE.

Black Tie Service
Plain Wrap Prices

FREE national delivery for all orders over $200*

PRODUCT DESCIPTION	Inc-GST
ABC Flowcharter 7.0 (Micrografx)	285
ACT! 2000 5.0	185
Adobe Acrobat 4.05	505
Adobe Illustrator 9.0	925
Adobe Pagemaker 6.5 PLUS	1,185
Adobe Photoshop 6.0 (Inc. ImageReady 3.0)	1,395
Adobe Publishing Collection 9.0	2,245
Allaire Homesite 4.5	193
ARCserve 2000 Workgroup Edition	957
AutoCAD LT 2000i & FREE MS Optical IntelliMouse	1,249
Corel Draw 10 Upgrade	569
Crystal Reports 8.0 PRO	781
CuteFTP (Transfer files across the Internet)	89
Dragon Naturally Speaking 5.0 Preferred	329
Filemaker Pro 5.0 (Win/Mac)	435
Macromedia Dreamweaver 4.0	649
Macromedia Flash 5.0 Full/Upgrade	820/345
Macromedia Web Design Studio 3.0	1,625
MAUS Stockmarket Plus	169
MS Encarta 2001 Reference Suite	165
MS FrontPage 2000 Full/Upgrade	186/99
MS Office 2000 Premium C/Upgrade	689
MS Office 2000 PRO C/Upgrade	629
MS Office 2000 Standard C/Upgrade	495
MS Office 2001 (Macintosh)	895
MS Outlook 2000	175
MS Project 2000 Full/Upgrade	899/322
MS Publisher 2000	164
MS Visio 2000 Professional	720
MS Visio 2000 Standard	325
MS Visual Basic 6.0 Pro C/Upgrade (Upg from MS Office Pro)	479
MS Windows 2000 Pro Upgrade From NT	289
MS Windows 2000 Professional	599
MS Windows 2000 Server & 5 Clients Upgrade	949
MS Windows Me (Millennium Edition)	339
MS Windows Me Upgrade (From Win 95/98) SPECIAL!	99
MS Works Suite 2001	165
MS Press MCSE Core Requirements Training	295
MYOB Accounting Plus 10.5 (Win/Mac)	515
MYOB FirstAccounts (Win/Mac)	189
Norton AntiVirus 2001 Single/5 User	82/239
Norton Ghost 2001	129
Norton Internet Security 2001 Personal	110
Norton pcAnywhere 9.2 Host & Remote	199
Norton SystemWorks 2001 & Personal Firewall 2001	169
Norton SystemWorks 2001 Professional	169
Norton Utilities 2001	88
OmniPage Pro 10 Crossgrade/Upgrade	193
Paint Shop Pro 7.0	199
PowerQuest Drive Image 4.0 Full/Upgrade	119/55
PowerQuest Partition Magic 6.0 Full/Upgrade	128/59
QuickBooks 7.x	220
QuickBooks 7.x PRO	395
Quicken CashBook 8.0	179
Quicken Personal Plus 8.0	115
Retrospect Desktop Backup	375
TurboLinux Workstation 6.0	55
VET Net Surfer / Premium	79/95
Visioneer PaperPort 7.0 Deluxe	127
Winfax Pro 10	134
WinZip 8.0 - 1 User	69
ACADEMIC VERSIONS (Student/Teacher ID Required)	**Inc-GST**
ED Adobe Acrobat 4.0	199
ED Adobe Illustrator 9.0	179
ED Adobe Photoshop 6.0	569
ED Corel Draw 10	358
ED Filemaker Pro 5.0	313
ED Macromedia Dreamweaver 4.0	239
ED Macromedia Fireworks 4.0	239
ED Macromedia Web Design Studio	585
ED Microsoft Academic Titles	*CALL*
ED Norton AntiVirus 2001	55
ED Norton Internet Security Family Edition 2001	82
ED Norton SystemWorks 2001 & Personal Firewall	110
HARDWARE/PERIPHERALS	**Inc-GST**
Compaq iPAQ H3630	1,145
D-Link Wireless PCMCIA / PCI Card	345/499
HP Deskjet 640C / 840C	172/269
HP Deskjet 990Cxi Photo Business Printer	749
HP Laserjet 1100	699
HP Scanjet 3400C / 4300C	230/275
HP VEi8 Vectra & 15" HP Monitor (PIII 550MHz/64MB RAM)	1,649
iBOT Firewire Video Camera / Pro	399/450
Iomega Internal IDE 32x8x4 CD-Writer (Limited Stock)	359
Iomega Mega Twin Bundle (CD-Writer & Drive)	399
Iomega ZipCD USB 6x4x4 Burner (Win/Mac)	479
Lexmark Z11 Printer (Limited Stock)	99
LG 15" / 17" Monitor	255/379
Palm Vx / IIIxe (NEW!)	790/435
Pinnacle Studio DV / PCTV USB	289/229
Quantum Snap Server 15GB	1,199
Sony CyberShot P1000 DSCP1 Digital Camera (NEW!)	1,899

FULL RANGE OF TONERS & CARTRIDGES AVAILABLE



"Receive a 3% rebate with our SmartBuy Club"

Adobe Premiere 6.0 NEW!

Creating video for the Web, DVD, CD-ROM, and videotape. Robust DV support, direct export to all the leading Web streaming-video formats, and enhanced professional tools. **Academic version $575.**

$1,275 DELIVERED

$38.25 SMARTBUY REBATE.

Microsoft Office 2000 Value Pack

Includes **FREE** MS Press Book as well as Office 2000 Std Upgrade, Publisher, MS Encarta, Age of Empires, IntelliMouse, Norton AntiVirus, plus more!

FREE upgrade to Office XP (Conditions apply - Limited stock)

$499! DELIVERED

PC Anywhere 9.2 (Host &Remote)

Keeps you productive wherever you are by letting you connect to your office PC to retrieve files or run desktop applications. Remotely support customers & manage servers effectively. **Academic $162.**

$199

$5.97 SMARTBUY REBATE.

Toshiba Satellite NEW!

Features Celeron 600MHz, 64MB RAM, 6GB Hard Drive, 13" LCD Screen, 4MB SGRAM , 24x CD-ROM, 1.44MB Floppy Disk Drive, 56K V.90 Modem, MS Win ME, 1 Year warranty & FREE CARRY BAG . Other models available.

Rent for $23.53 per week.

$2,399 DELIVERED

$71.97 SMARTBUY REBATE.

Pinnacle Studio DV

Create Streaming Video CDs and streaming videos. Capture, edit and output in full DV quality with the ease of the Studio software's 3 easy steps. Capture the entire DV tape into their hard disk drive in preview quality in only 150MB!

$289 DELIVERED

$8.67 SMARTBUY REBATE.

Artec 32x8Rx4RWx Internal Burner

Maximum 4800KB/second data transfer rate. Front panel with Stop/Eject, volume control buttons and headphone connector. **Includes Nero 5.03 software & 14 CD's FREE!**

$298 DELIVERED

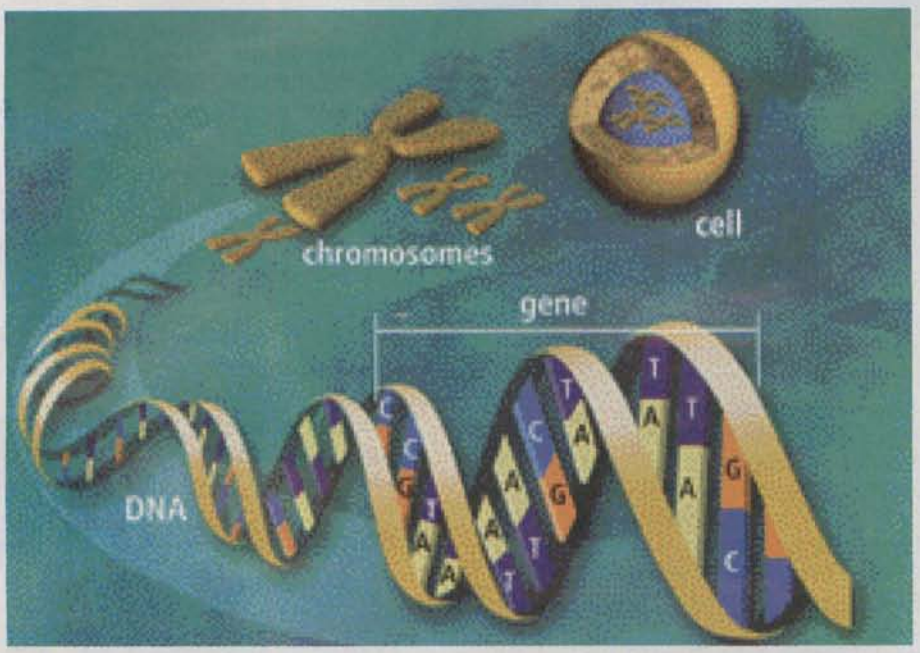
$8.94 SMARTBUY REBATE.

CITY SOFTWARE®

*FREE national delivery for all orders over $200, otherwise add $11 for delivery ($5.50 for next morning Sydney and Melbourne metro delivery: order by 4pm). Additional charges may apply for orders over 5kg. Corporate/Government purchase orders and credit cards welcome (No Diners). Further discounts on quantity orders. Catalogue available on request. Only official Australian versions listed. Prices, versions and availability subject to change without notice. Conditions apply on rental agreements. E.&O.E. Fax 1300 658 010. Email: sales@citysoftware.com.au

ABN 11054615253

1300 658 600



▲ Media representations of genetics often exaggerate the role of genes. Here, DNA is the "molecule of life".

The power of genes

Perhaps the most fundamental question raised by genome research relates to the real role of genes in human health and behaviour. The question of what genes actually do is at the heart of the public interest in the HGP because gene research is based on the idea that genes control the body more than any other factor. Eminent geneticist and science critic Richard Lewontin has written a great deal specifically on genetic determinism and on biological determinism in general. His most recent book, *It Ain't Necessarily So*, brings together some of this writing, along with recent updates and responses to critics.

Put simply, biological determinism is the view that the body, and more specifically, hormones, brain chemicals, genes or inborn traits define who we are and limit our choices. The idea has been gathering favour in the West since the 17th century. According to Lewontin, it has become popular over the last three centuries because, since the beginning of the Enlightenment, people have preferred to think they live in an equal society where advancement is based on merit. Biological determinism has been embraced to explain, for example, why some people enjoy wealth and status while others live in poverty. As such, it lends legitimacy to our social organisation — it is, as Lewontin says, "the analgesic for our most recurrent social pain".

Lewontin quotes the famous science historian Stephen Jay Gould in making his point. "Science is a social activity that reflects the dominant ideology of the society in which it is carried out, the political pressures of the time, and the personal prejudices of the practitioners." Contrary to popular myth, science is not an objective pursuit untainted by politics and personal prejudice — it's as much a product of its time and of the influences it encounters as any other human activity. If society finds certain ideas useful, it embraces and encourages them. This is true of the contemporary interest in genes as the controllers of human development.

The accepted account of the role of genes in human development emphasises their activity and portrays DNA as reproducing itself and other proteins. However, as Lewontin points out, "DNA is a dead molecule, among the most nonreactive, chemically inert molecules in the living world. First, DNA is not self-reproducing; second, it makes nothing; and third, organisms are not determined by it."

> "DNA is not self-reproducing, it makes nothing, and organisms are not determined by it."

A more accurate account of the role of DNA is that it bears information that is read by the machinery of the cell in the process of production. This is a more modest claim than most. Lewontin points out that genes have achieved their high status through a gradual blurring of meaning. "Subtly, DNA as information bearer has been transmogrified into DNA as blueprint, as plan, as master plan, as master molecule."

If this interpretation of genes sounds familiar, it should. The media regularly overstate the role of genes in human development, using clichés such as 'the book of life', the 'master plan' and 'God's blueprint' to create the impression that we are nothing more than dolls controlled by our genetic makeup.

A look at the ways genes are talked about by scientists shows that they must share some of the blame for gene myth-making. For example, the director of the US government genome mapping program, Dr Francis Collins, said of the project, "We have caught a glimpse of an instruction book previously known only to God." William Haseltine, CEO of Human Genome Sciences Inc, a Celera competitor, said of the sequencing, "It will symbolise to many that we have the power to change human destiny."

Similarly, Adelaide's Grant Sutherland described the genome as containing all the information necessary "to govern the functioning of the human body". Perhaps most influentially, Richard Dawkins, in his widely read book *The Selfish Gene*, said that genes "have created us body and mind".

Creation, destiny, instruction books, government — the primacy of the gene is asserted again and again. This myth-making begets other myths. If you thought homelessness was a social problem, think again. When asked why the money going to the HGP should not just be spent on the homeless, Daniel Koshland, editor of the influential journal *Science*, replied, "The homeless are impaired. No group will benefit more from the application of human genetics."

Isabel Karpin, senior lecturer in the Faculty of Law at the University of Sydney, takes exception to this idea. She believes that "to suggest that a sequence of genes can stand in for the complexity of what it is to be human is a highly dubious proposition." It is equally dubious, but perhaps rather comforting, to believe that problems such as homelessness, drug addiction and poverty are the fault of our genes, not of society.

It must be said that this kind of gene propaganda isn't reproduced by all scientists. Venter has denied the notion of genetic

[pb] pocketbooks

THE linux 3rd edition POCKETBOOK



The penguin is back, and he's ready to play!

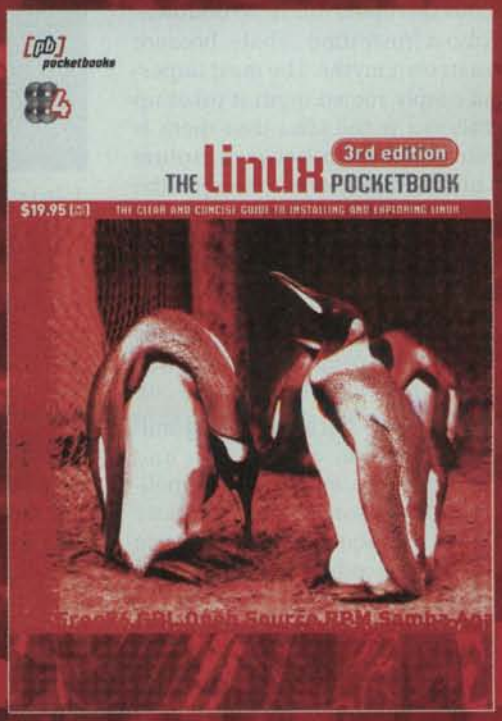
Australia's most popular guide to Linux is back. The Linux Pocketbook 3rd edition has everything you need to install, configure and explore the world's fastest growing operating system.

4 CDs OF LINUX GOODIES:

- **Red Hat Linux 7.0** full release plus latest upgrades
- **Mandrake Linux 7.2** full release with KDE 2.0
- **Win4Lin 1.0** fully working time-extended trial to March 31, 2001 — exclusive offer!
- Linux Pocketbook CDs containing all the best programs, themes, games, documentation and more!

THE PINNACLE OF LINUX WISDOM:

- Install and configure Red Hat 7.0 and Mandrake Linux 7.2
- Explore the Gnome and KDE desktop environments
- Connect to the Internet easily through modem or cable
- Harness the capabilities of the Linux command line
- Experience multimedia and gaming under Linux
- Run Windows programs under Linux and integrate Linux into a Windows network
- Make the most of your hardware with the performance and power of Linux



More pages. More CDs. More Linux.

Don't just play with Linux. Master it.

Onsale now for $19.95 (inc GST) at newsagencies everywhere or online at www.pocketbooks.net.au

ACP Tech

predestination, and defines the role of genes more modestly. If a test reveals the presence of a gene associated with a certain disease, "there's an increased risk. Increased risk does not mean absolute risk," he said. "People want genetics to be absolutely deterministic to absolve themselves of responsibility. That's not how it works. We're totally dependent on a combination of our genes and the environment."

Nature vs nurture

In some respects, the debate over the power of genes is a familiar one. Nature versus nurture; heredity versus environment — this is an old struggle. What makes the battle over the HGP particularly compelling is that the project is being conducted on a vast scale, witnessed by a vast audience and consuming a vast amount of money. As such, it carries high financial costs and possesses the power to create or smash important myths.

However, the debate is not only familiar, it is stale. Many don't want to argue over nature and nurture; they just want a simple explanation for sickness and emotional problems, and the promise that one day (scientists have said between 50 and 100 years from now) miraculous therapies will be available.

It is also a frustrating debate, because it creates its own myths. The most important and deeply rooted myth it takes up and reinforces is the idea that there is some real distinction between nature (genes) and culture (environment) in the first place. On the contrary, human genetic material has been shaped by culture and politics as well as by what we call 'nature'.

For example, the mixing of genetic material between people from different geographical regions is the result of cultural and political forces spanning millennia. The creation of a unique and stable gene pool is also the result of politics. The only reason Norfolk Islander people have a unique genetic profile to sell is that their ancestors, a mix of British sailors and Polynesians, travelled in ships, participated in a mutiny and were resettled on an isolated island! These are hardly the forces of 'nature' at work. If genes represent nature, then nature is thoroughly mixed up with culture.

As a concept, nature has a lot of power. Everyday ideas about what is natural and what is unnatural influence how we feel about different ways of behaving and different lifestyle choices. For example, homosexuality is commonly criticised as unnatural. However, critics are usually hard pressed to elaborate on what harm homosexuality can do, or why its unnaturalness is a problem. We are used to thinking natural is good and unnatural is bad, so an accusation of unnaturalness is assumed to be convincing in its own right.

As we can only ever think about nature through the concepts our culture makes available, what we take to be natural changes over time. As our culture changes, so do the contents of the category we create called 'nature'. A simple example of this is the way humans are seen as part of nature in some cultures and historical periods, and as above or separate from nature in others. On another tack, food is often classified as natural or unnatural using dubious distinctions between natural and unnatural ingredients and methods of preparation. Judgements based on the



▲ An example of mapped code

natural are everywhere.

When scientists study the human genome and call the genome's effects those of nature, they assume that the genome has not been shaped by culture. They also set up a highly judgmental context for making claims about which physical and mental characteristics are genetic, or natural, and which are not.

Like Lewontin, many scientists, philosophers and researchers focus on the complexity of human behaviour, and don't believe it to be genetically determined or even influenced. They also see physical characteristics and illnesses as extremely complex — as the product of interactions between a range of culturally understood factors that include upbringing as well as genes and hormones.

Despite this, the idea of the gene as the master cell and of nature as the arbiter of good and bad persists. In fact, it's probably stronger than it has been at any time since the beginning of the 20th century, when genes first became an object of study. The idea of nature has a long history and is not often questioned, except by those who have been criticised because of judgements based on nature, such as gay men, lesbians and women who choose not to have children. The natural is a very demanding concept — it affirms people, objects and activities that fall within its ever-shifting boundaries, but punishes those that don't.

Perhaps the directors of the Human Genome Project need to do more than address the ethical issues created by the project. Had the project been *shaped* by conscious ethical questions as well as by scientific ones, it might have looked rather different. The validity of parallels between genes and nature might have been regarded with suspicion, and an effort might have been made to separate the two concepts.

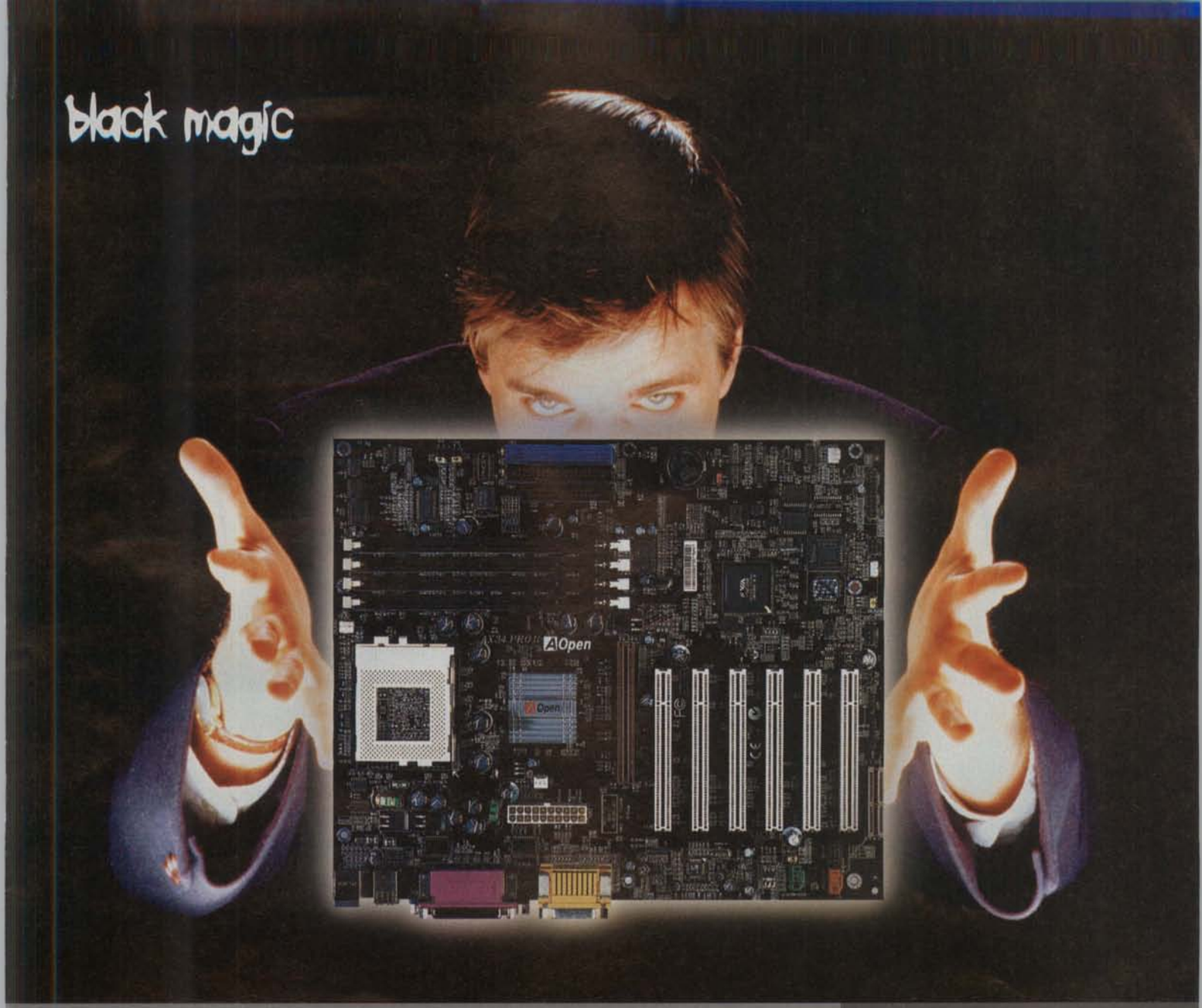
The trouble with this solution is that the reason the project has so much power is precisely because we set so much store in 'human nature'. To underplay nature in defining the project would be to sacrifice some of its authority.

Imagine for a moment that the project hadn't been promoted as revealing the 'book of life', as opening the window into 'Mother Nature's mind' and into the 'essence' of what it is to be human. Imagine instead that it had been promoted as a very expensive, very painstaking research program that one day (perhaps within 50 or 100 years) might provide some therapeutic strategies for extremely rare diseases, and might help us understand how one element out of many contributes to human development.

Would the project have received as much funding and attention if it had? Would spin-off genomics companies be enjoying the levels of investment they are now? As Lewontin said of Cyril Burt's now discredited twins research into genetic influence, "Scientists, like others, sometimes tell deliberate lies because they believe that small lies can serve big truths." In other words, scientific 'truths' can be twisted to serve a variety of purposes.

Despite the hype, there are many people who aren't convinced that genes tell the story of our physical destiny or our psychological make-up. To them, genetic profiles revealing alcoholism or homosexuality just aren't possible. After all, if no such genes exist, they can't be revealed in a profile. From this point of view, it's easy to think fears of discrimination are unjustified. However, there are many decades of uncertainty ahead before such genes are categorically ruled out. As a result, genetic determinism and all its implications will influence our understanding of human beings for a long time to come.

black magic



Did you ever imagine for a moment just what a motherboard can do? The extent of its powers? The magic it can produce?

Prepare to be amazed by the AOpen AX34PRo II motherboard. You'll be dazzled by its 4 USB ports and its 2x/4x AGP support. You'll be shocked at its Doctor Voice with 4 language versions and the strength of its Die-Hard Bios. And you'll be enchanted by its mysterious black casing.

There are no tricks. But it does have a lot up its sleeve.

Other features include:
Audio Codex, Jumper left design, Ultra DMA, Doctor LED for easy problem display.

Ask about the AOpen AX34PRo II motherboard at your nearest Servex dealer.
You can also check out the entire range of Servex AOpen motherboards: Socket 370: VIA chipsets, AX34Pro, MX34, Intel 815 E chipsets, MX3S, AX3S, AX3Spro, Socket A:, AK33, MK33



AX34Pro II (black)



AX34Pro (green)

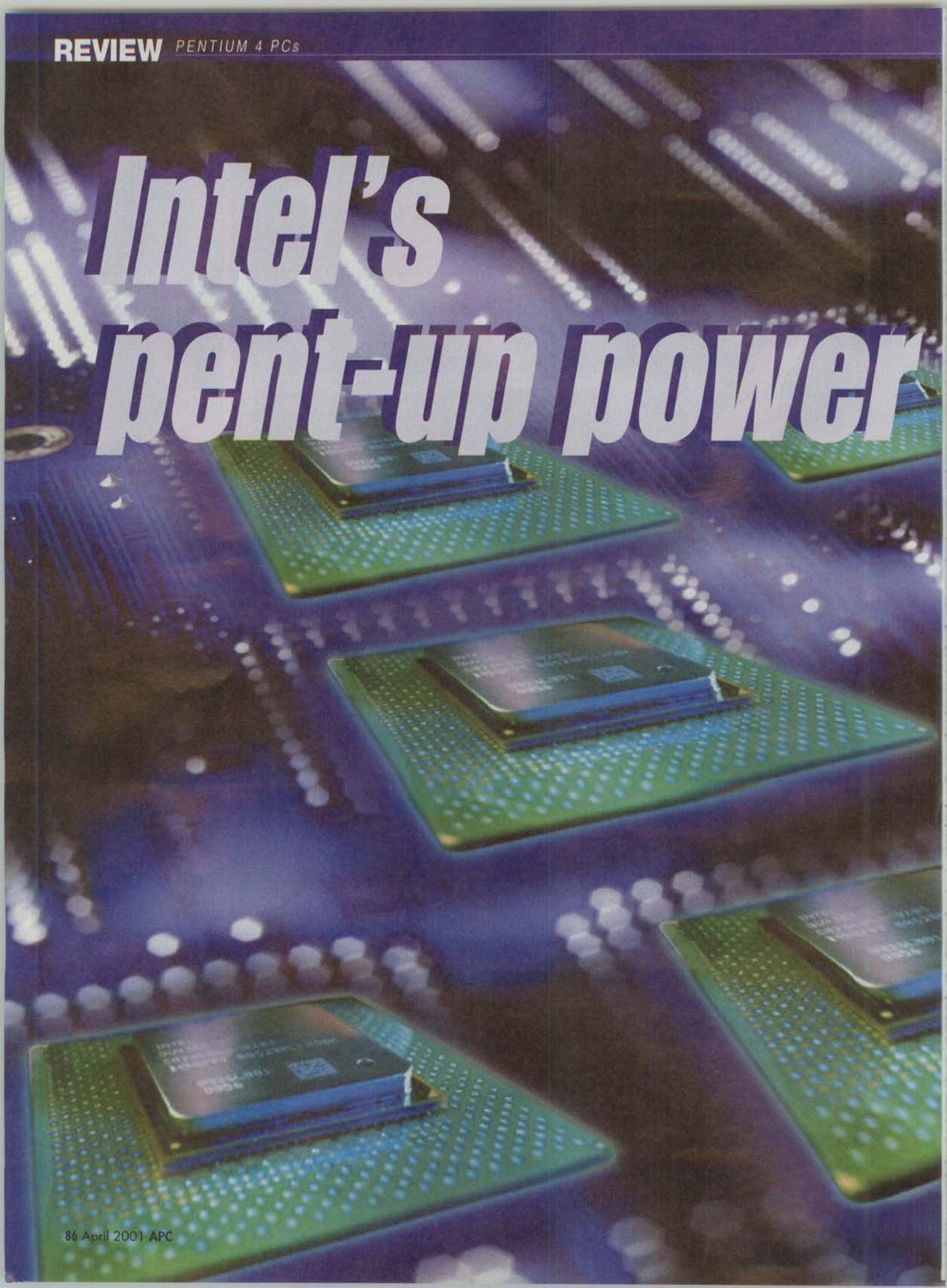
SERVEX www.servex.com.au

NSW: Best Byte (02) 9436 0788 • Paradigm X (02) 9524 6699 • Advanced Customised Computers (02) 9692 9988 VIC: Best Byte (03) 9561 8777 • Omega (03) 9800 3444 • Sato (03) 9899 6333 QLD: Compuworld (07) 3846 7588 • Omega (07) 3272 2386 • Intermedia (07) 3369 0477 • QLD: (07) 4634 7999 • Sato (07) 32556899 SA: Crest (08) 8351 0500 • Omega (08) 8410 3434 WA: Direct Memory Access (08) 9445 9500 ACT: Cougar Computers (02) 6242 2777 PNG: Daltron Electronics (675) 325 6766. Servex Australia Pty Ltd, ACN 076 438 808. AOpen is a registered trademark of AOpen Inc. All other product, brand and company names are trademarks of their prospective owners.

AOpen
servex

M8a22.12.00blackmagic

Intel's pent-up power





When Intel's Pentium 4 was released to a not very excited world late last year, initial reviews were damning, but the new processor has some redeeming features. ***Darren Ellis*** *takes the lid off the latest Pentium 4 machines to see what makes them tick.*

The story of the Pentium 4 is not a pretty one; there was problem after problem before they were finally released in November last year. To begin with, Intel engineers had known for a long time that the run of Pentium IIIs would reach an end — there was only so far they could push the speed of the processor. This was proven by the problems and instability of the 1.13GHz Pentium III, which was eventually recalled by the manufacturer late last year.

When the successor to the Pentium III was designed, it couldn't just be a modification of the Pentium III design, as the Pentium III had been essentially a modification of the Pentium II; a total overhaul of the wafer was required. The chip designers' original intentions were good; it was a chance to design something groundbreaking.

As fate (and rumour) would have it, when all of the engineering divisions in Intel finally submitted their particular requests and designs, there were so many new elements to add to the silicon chip that fitting them all on to one wafer was going to be impossible. A lot of the modifications had to go, and as time progressed, the slashing of features and functions became more severe. Some Intel engineers spoke publicly after the Pentium 4's performance proved to be even worse than expected, slamming Intel for rash design decisions that have hampered the processor's performance.

Of particular note is the decision to use RAMBUS technology for the RAM. RAMBUS requires two RAM slots to be filled at once, which doubles the number of chips required for a system. Add to this the fact that RDRAM is far more expensive than SDRAM, as well as ongoing technical glitches with the RAM which delayed motherboard releases, and you can see why enthusiasm for the upcoming chip waned. Some time later this year, DDR SDRAM motherboards compatible with the Pentium 4 should be available.

It ain't all bad

When reading articles about the processor, it is tempting to go straight to the bottom line — the Pentium 4 is expensive, it requires a whole new case and a larger cooling fan, and worst of all, its performance is inferior to slower processors like the Intel Pentium III and the AMD Athlon. It sounds like a lot of doom and gloom, but there *are* beneficial aspects to the new processor that are usually glossed over.

Gamers should get a huge boost from the chip. There have been some ludicrous frame rates claimed for Quake III Arena on the Internet, but even *APC* Lab's tests have shown massive increases — to over 180 frames per second, when the human eye can only detect about 25 per second.

Business applications will not run much faster than they do on a lower clocked Pentium III, because that section of the wafer has largely been left as it was.

Other advantages are the steps involved in the processing pipeline. The pipeline length has doubled from 10 to 20 sections, but the individual steps are much smaller than they were before, meaning that the processing gets done faster. There is also greater error checking and correction along the pipeline, as well as a separate pipeline cache. In the Pentium III, when an error occurred within the pipeline the whole lot had to be 'flushed' clean, but the Pentium 4 can retrieve data from the last pipeline cache and carry on. Intel claims that this cuts down on up to 33% of errors, compared to a Pentium III.

In theory, applications *should* run much faster with the new chip design, but at the moment they won't, because the software and drivers have not been written to take advantage of the new processes. Intel has not been promoting the new processor heavily, contrary to its usual tactics, but has concentrated its advertising on the ageing Pentium III. Manufacturers are not stocking as many systems as anticipated, but the new machines are available. If you have an itch to play with the latest, then read on for a sample of Pentium 4 systems.

Compaq Deskpro EXS



The Compaq Deskpro EXS is the only business system in this review, but there are features that also make it ideal for leisure. Although it features the same specifications as the other machines tested (1.5GHz Pentium 4 and 128M of RDRAM), the unit performed better than average in most of the *APC* Labs benchmark tests.

Benchmarks like Ziff-Davis Business Winstone 2001 and BAPCo SYSmark2000 are good indicators of the power of a machine's processor and RAM, but all of the machines are similarly configured in this respect, so the scores for those are quite consistent.

The Deskpro EXS distinguished itself in the hard drive tests. Both scores were high, but the High-End Disk WinMark 99 score was a lot higher than the second fastest drive, the Dell Dimension 8100. The Deskpro has a 40G drive, which is more than ample capacity for a workstation.

This machine stands out from other typical business workstations with the inclusion of a decent graphics card, DVD-ROM and CD-RW. The 64M DDR nVidia GeForce2 GTS card scored very well in the benchmark tests, with a very high 3DMark2000 score and high frame rates for both the gaming tests. It could be a decent gaming or DVD-watching machine, but the lack of speakers and integrated SoundBlaster 128 take away from this.

The machine comes with both a 56K modem and a 10/100 Ethernet adaptor for fast networking.

Note: As *APC* went to print, Compaq changed the configuration for this system. It now comes with a 32M nVidia GeForce2 GTS graphics card, rather than the 64M card in the system *APC* tested.

Pros Good hard drive
Cons No speakers to complement DVD

Contact Compaq
Phone 13 23 93
Online www.compaq.com.au
Price $5,544

Dell Dimension 8100



The Dimension 8100 is Dell's Pentium 4 flagship, and it marks a departure from boring beige cases. The sleek new Dimension 8100 has a black and burnished silver finish. If you like to change parts as time goes by, then you'll be pleased to know that opening the case is a walk in the park. It's the first screwless case *APC* Labs has seen for a while, and it's solidly held together with buttons that allow access. Another great inclusion is an internal brace that extends from the front to the rear of the case and holds the graphics card firmly in its slot.

The nVidia GeForce2 Ultra GTS graphics card has 64M DDR SDRAM, and ranked very well in the graphics benchmarks. Gaming frame rates were high, including an exceptional 184fps in Quake III Arena and a very respectable 72fps average in Expendable. Add a good 3DMark2000 score and the card seems more than capable of matching all your gaming needs. The Video2000 scores were also high, which indicates a solid card for 2D and DVD playback.

Complementing the graphics card is a 19in Trinitron display and a Turtle Beach Santa Cruz soundcard — a six-channel, 5.1 card. The Altec Lansing ADA885 speakers are a set of four satellites and a subwoofer — all Dolby Digital-compatible and THX-certified. It is excellent for a PC speaker set and adds great effect to surround sound.

The unit comes with a 40G hard drive, which scored well in the Ziff-Davis disk tests, and a CD-RW drive. The Dimension 8100 is a great machine for all your needs at home, and can handle any business tasks you might need.

Pros Good case design
Great graphics and audio
Cons Not much room to move inside

Contact Dell
Phone 1800 812 393
Online www.dell.com.au
Price $4,904

How we tested

To test the performance of the systems submitted for review, *APC* Labs used Winstone 99, 3D Winbench 2000 and WinBench 99 benchmark software from Ziff-Davis; BAPCo SYSmark2000, Video2000 and 3DMark2000 from MadOnion; plus some gaming tests such as Quake III Arena and Expendable. Each system was fully set up for review, and CDs and DVDs were run to gauge picture and sound quality.

Each system used Windows 98 as not all the benchmarks run under Windows Me. Where applicable, the operating system was uninstalled and replaced with Windows 98. All the latest drivers were loaded onto the machines, including the latest drivers for the new Pentium 4 motherboards.

Business Winstone 2001 runs an automated script through a suite of modern business and graphics applications, records how long the system takes to complete these tasks, and gives an aggregate score.

WinBench 99 contains a set of subtests, each designed to find out how fast each component of a system really is.

Business and High-End Graphics

WinMark 99 measure the system's graphics performance when performing video tasks associated with common business applications as well as demanding multimedia and 3D applications.

Business and High-End Disk WinMark 99 provide a measure of how a system's hard disk handles a load equivalent to that demanded by the business applications used in the

Gateway Performance 1500XL



The Performance 1500XL is one of the best home systems Gateway produces. All four machines were configured similarly, but the Perfomance 1500XL has higher clocked PC800 RDRAM, which gives it faster number-crunching capabilities. This allowed the computer to score higher in the business application tests, such as the Ziff-Davis Business Winstone 2001.

This machine is a very capable entertainment system. However, in comparison with the other systems, the 3D capabilities seemed lacking, even though it has an nVidia GeForce2 GTS video card with 64M SDRAM. It managed 70fps in Quake III Arena, but the other units were all over 145fps. In the Expendable timedemo it rated an average of 32fps, but a minimum of 15fps. This is almost unplayable, but with some tweaking it would be fine. As a standalone system, the graphics capabilities are good enough for gaming, DVD playback and graphics work.

The system's audio facilities are excellent. The SoundBlaster Live is a high-end soundcard for gaming and home use, which is now becoming a standard inclusion for performance systems. The Boston Acoustics BA75 speaker system is Dolby Digital-compatible and features a subwoofer as well as four surround-sound satellite speakers. The satellites have a very thin design that belies their overall audio competence.

With its 40G hard drive, the system would satisfy most people's storage needs. The hard disk scores showed it to be a fast drive that wouldn't hold up applications. Although tested under Windows 98, this system ships only with Windows Me.

Pros Great audio
Excellent for home entertainment
Cons Graphics could be better

Contact Gateway
Phone 1300 302 952
Online www.gw2k.com.au
Price $5,999

Pioneer P4 Power PC



The P4 Power PC may be the final system in this roundup, but it certainly didn't come last in the benchmarks. Although a lot of the components are similar to those of the other systems, the unit performed very well with the graphics benchmarks, making this a great system for home gaming.

You couldn't really do much better than this system for gaming. The test scores were very high, and similar to the Dell Dimension 8100's scores. The 3DMark2000 result was just behind the Dell, but it was a lot faster than most other cards available. As a bonus, the system also comes with a gaming pack which includes Deus Ex, MDK2 and Thief 2.

The system's audio was also very good, with a SoundBlaster Live soundcard. The matching Creative PC Works subwoofer and satellite speaker combination is great for games, but doesn't match the quality of the Gateway's Boston Acoustics or the Dell's Altec Lansing speaker combinations for watching DVDs or listening to music. The 17in Hitachi monitor is not one of the best monitors, but is more than ample for PC needs.

The P4 Power PC is the cheapest system in this review by well over $1,000, and the only real concession is its hard drive capacity, which is 30G, not 40G as provided in the other machines. The drive was also a little slower in the two Ziff-Davis tests, but this is a minor consideration when you're looking at that much of a saving.

Possibly the most enticing feature of the system is the wide range of operating systems you can choose from, including various flavours of Windows and Linux.

Pros Fast and capable system
Lots of OS options
Cons Speakers don't lend themselves to immersive theatre or gaming

Contact Pioneer
Phone (02) 9690 2888
Online www.pioneercomputers.com.au
Price $3,999

Business Winstone 99 test.

3DMark2000 tests 3D accelerators in a real world environment, and is designed to simulate the demands of games and applications.

SYSmark2000 is an application-based system test that returns a score based on a system's business productivity and Internet content creativity abilities. Although it gives a separate score for each, APC prints only the aggregate score, which is more applicable.

Video2000 is a system-wide benchmark that tests a machine's overall video capabilities. It rates functions such as rendering and video decoding for MPEG and DVD playback. It returns four scores based on system and video card features, performance, quality and overall score.

Quake III Arena is a gaming test that runs a demo to record how many frames per second the system is capable of. *APC* Labs also ran **Expendable** timedemo, which counts the average fps and reports on the minimum fps achieved. This minimum fps score is very important, because it reflects the video card's performance in rendering complex scenes, and tells you the minimum standard the card tested at.

Information contained in this article is based on products and specifications supplied to *APC* by distributors at the time of writing. Readers should check current pricing and specifications with distributors.

These tests were performed without independent verification by Ziff-Davis and Ziff-Davis makes no representation or warranties as to the results. WinBench is a registered trademark of the Ziff-Davis Publishing Company.

Pentium 4 PCs: Specifications and results

Product	Deskpro EXS	Dimension 8100	Performance 1500XL	P4 Power PC
Contact	Compaq	Dell	Gateway	Pioneer Computers
Phone	13 23 93	1800 812 393	1300 302 952	(02) 9690 2888
Online	www.compaq.com.au	www.dell.com.au	www.gw2k.com.au	www.pioneercomputers.com.au
Price	$5,544	$4,904	$5,999	$3,999
Warranty	3 years parts and labour, 1 year onsite	3 year parts and labour	1 year onsite	2 years RTB
Specifications				
Processor	1.5GHz Intel Pentium 4	1.5GHz Intel Pentium 4	1.5GHz Intel Pentium 4	1.5GHz Intel Pentium 4
Secondary cache	256K	256K	256K	256K
RAM and type (maximum)	128M RDRAM (1G max)	128M RDRAM (1G max)	128M RDRAM (1G max)	128M RDRAM (2G max)
Hard disk	40G Ultra ATA	40G Ultra ATA	40G Ultra ATA	30G IBM Ultra ATA/100
Hard disk controller	Intel 82801BA Ultra ATA	Intel 82801BA Ultra ATA	Intel 82801BA Ultra ATA	Intel 82801BA Ultra ATA
Hard disk file system	FAT32	FAT32	FAT32	FAT32
Graphics card	nVidia GeForce2 GTS	nVidia GeForce2 Ultra GTS	nVidia GeForce2 GTS	nVidia GeForce2 Ultra GTS
Video bus type	AGP	AGP	AGP	AGP
Video RAM	64M SDRAM (Final sale version will have 32M)	64M DDR SDRAM	64M SDRAM	64M SDRAM
Video controller chip	nVidia GeForce2 GTS	nVidia GeForce2 Ultra GTS	nVidia GeForce2 GTS	nVivdia GeForce2
Graphics driver name and version	Detonator 3	Detonator 3	Detonator 3	Detonator 3
Monitor	17in Compaq	19in Dell	17in Gateway	17in Hitachi
Tested resolution/colour depth/ refresh rate	1,024 by 768/16 bit/75Hz	1,024 by 768/16 bit/75Hz	1,024 by 768/16 bit/75Hz	1,024 by 768/16 bit/75Hz
CD/DVD/CD-R drives	10x DVD, 8x/4x/32x CD-RW	12x DVD, 8x/4x/32x CD-RW	16x DVD	16x DVD
Soundcard	Integrated SoundBlaster 128	Turtle Beach Santa Cruz	SoundBlaster Live	SoundBlaster Live
Speakers	No	Altec Lansing ADA885	Boston Acoustic BA7500	Creative PC Works
Connectivity	V.90 56K PCI modem, 10/100 PCI Ethernet	Internal V.90 56K PCI, integrated 10/100 Ethernet	Internal V.90 56K PCI	None
OS available	Windows Me	Windows Me, Windows 2000	Windows Me	Windows 95/98/Me; Windows NT/2000; Linux
Software and accessories	Office 2000 Small Business Edition	Norton Utilities 2000, Microsoft Works 2000	Microsoft Works Suite 2000, DVD Adventure Suite	3D Future Beat, Deus Ex, MDK2, Thief 2
Benchmark results				
Business Graphics WinMark 99	343	343	328	340
High-End Graphics WinMark 99	998	998	983	997
Business Disk WinMark 99	6,365	6,306	8,157	4,063
High-End Disk WinMark 99	9,640	8,780	8,864	6,400
Business Winstone 2001	33	33	43	28
3D Winbench 2000	118	159	Could not run	157
SYSmark2000	187	180	174	174
Video2000	2,543	2,469	2,282	2,373
Quality	839	801	772	851
Performance	1,104	1,068	980	921
Features	600	600	530	600
3DMark2000	7,677	8,905	1,090	8,767
Quake III Arena 1,024 by 768 at 16 bit	148	184	70	163
Expendable timedemo				
Highest fps	136	149	51	148
Lowest fps	36	37	15	37
Average fps	69	72	32	72

EDITOR'S CHOICE
Australian Personal Computer

Pioneer P4 Power PC

Having reviewed such a small range of machines, *APC* expected picking a winner to be easy. However, all the systems we looked at have very similar configurations. Eventually, *APC* decided on the Pioneer P4 Power PC as Editor's Choice because it has considerable grunt and a very affordable price. Its configuration will also 'futureproof' it for a while. The speakers and monitor are not top notch, but the modest price tag justifies this.

The best distributor of CD-ROM, CDR-W & DVD drives

RICOH

Galas Electronics is authorised distributor for all RICOH products.

RICOH MP7063A RRP $259 inc GST



- Amazing value!
- 32x6x4x Read Record ReWrite
- Highest quality
 Japanese Made Drives
- Easy To Use
 Software:
 Primo CD plus CD Mastering Software
 abCD UDF packet writing software
 Free CD-R and CD-RW Discs
- Unrivalled Compatibility
 Wide range of CD-R CD-RW media and CD Formats supported

NEW! RICOH MP7125A

32x12x10x Read Record ReWrite

- NEW from Ricoh, now with JustLink Technology
 JustLink make sure buffer underruns are a thing of the past. Same bundled software as 7120A.

RICOH MP9120A

32x12x10x&8x Read Record ReWrite DVD Read



MP9120A

- Experience the power of 4 drives in one
 Power of the MP7125A and 8x DVD for those who demand ultimate in value.



Omni CD-ROM

Dealers Wanted

- High Quality 100,000 hours MTBF
- High Performance 7800KB/sec data transfer
- Best Value competitively priced



Omni DVD-ROM offers exceptional value by combining two drives into one!

- High Performance 16x DVD with 40x CD-ROM
- Great compatibiliy supports all CD-R,CD-RW media & all DVD, CD formats
- Great Value two drives in one, Power DVD software included to play DVD movies



Omni Writer 32x8x4 Read Record ReWrite MP3 supported

Dealers Wanted

- This is the best priced CD-Writer
- Complete with NTI CD Maker software

Specifications are subject to change without notice, pictures are for illustration purposes only. E&O.E

Galas Electronics Australia

website: www.galas.com.au
email: sales@galas.com.au

Sydney: 11 Burrows Road (south), St Peters, NSW 2044. Tel (02) 9550 6888 Fax (02) 9550 4299
Melbourne: 5 Bando Road, Springvale, VIC 3171. Tel (03) 9540 3899 Fax (03) 9540 3866
Brisbane: 22 Austin Street, Newstead, QLD 4006. Tel (07) 3852 4088 Fax (07) 3852 6166



You little ripper

Despite the best efforts of record companies and disgruntled rock stars, the MP3 format is going from strength to strength. Ripping your own audio CDs is now a regular activity for a huge number of PC users. ***Jeremy Torr*** *takes some of the most popular rippers and looks at how they stack up.*

Even if you mainly listen to MP3s downloaded off the Net, you probably also want to play some of your favourite CD tracks. To do this you need a ripping utility. The ripper allows you to pop any audio CD in your PC, press the button and create a new MP3 track. Recently released rippers have moved beyond the command line, rip-only world and now provide sophisticated interfaces complete with ripping, archiving, DJ mood and style auto-playlist selection, streaming Net audio and a host of other audio-visual options.

The latest batch of rippers come with a comprehensive range of extras such as automatic drive-speed detection, automatic level control and a host of track-labelling options. Many also offer a built-in player option, the ability to download to portable players, and some slightly dubious visual lightshow effects. The availability of different colours and styles of skins is a bonus.

Most programs use embedded ripping algorithms (usually Fraunhofer based), but some use external codecs such as LAME or BladeEnc. In most cases, the program allows selection of preset bit rates and sampling frequencies, and some offer variable bit rate (VBR) for best audio quality combined with minimum file size.

Another aspect to consider is availability. Many rippers are only available on the Net and may have to be paid for if they are over a couple of megabytes in size. Of the programs *APC* reviewed, only a few are true freeware. Many have time limits and other restrictions.

Choosing a ripper also requires a look at its cross-format ripping capability. This is important if you intend to use a range of music file formats. It's also important to some people to be able to catalogue tracks using CDDB (or another online track listing database), and to easily edit track tags and filenames from within the ripping program.

When ripping tracks from audio CD, other things to consider are quality, speed and efficiency. Some rippers achieve noticeably different quality and speeds to others.

How we tested

All the rippers tested were loaded into a Celeron 500 desktop PC running Windows Me with a 24x CD-ROM drive. The time taken to rip an MP3 file from a standard audio track (Iva Davies, 'Heaven') was measured, and the size of the resulting file was noted. The ripper was set to 128Kbps, 44kHz, or the maximum possible if these were not within limits. *Ripping speed was set* to standard or medium. The track was played back through a Creative Blaster Live Platinum soundcard and Cambridge Audio powered speakers. Quality was compared to the original using Windows Media Player 7.

AudioCatalyst 2.1

Based on the Audiograbber shell, AudioCatalyst offers a less in-depth function set than Audiograbber, and slightly better performance. Using the same pre-registration random track selection facility, the interface is simpler and comes with a bonus MP3 player. The only configuration option is bit-rate adjustment; bit rate can be set from 16 to 320Kbps. There are no sampling frequency options, and only MP3 and WAV ripping is available. There is also reasonable track tag editing and normalisation, and the package uses an integral encoder. This works well and is fairly fast. It produced a 4.19M file in one minute and 44 seconds; much faster than Audiograbber and with noticeably better quality. The player that is included in the package is simple and effective.

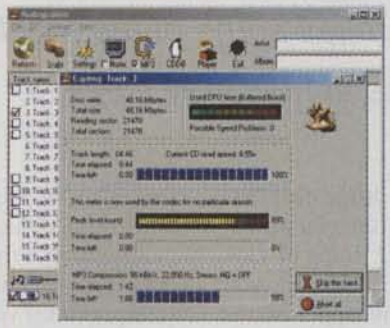


Pros Simple interface
Fast ripping and good bit-rate range
Cons Limited format support
No sampling options

Contact Xing
Online www.xingtech.com
Price Free

Audiograbber 1.62

Audiograbber has an appealing interface and works well. However, two limitations make upgrading from this freeware version to the shareware version worthwhile. First, it only rips a random selection of tracks — about half of every audio CD. Second, ripping settings are limited to 56Kbps and 22kHz for bit rate and sampling. This is a nuisance, but is offset by a huge selection of other built-in options. WAV, WMA and MP3 rips are supported, as is almost every other function you can name, from track level normalisation to stereo/mono, superb ID3 and label editing. Our sample track ripped reasonably slowly at three minutes and 36 seconds, despite the small 1.9M file size. Sound quality was surprisingly good considering the low settings used.



Pros Appealing interface
Excellent option range
Cons Free version only rips random tracks

Contact Jackie Franck
Online www.audiograbber.com-us.net
Price Free or shareware

Earjam IMP 2.0

IMP can rip, play, catalogue, download to portables and burn MP3s to CD all from the one interface. It has some whacky icons, but it's easy to operate and reasonably intuitive. Most of the interface is taken up with a huge eyeball, surrounded by the usual playlist, options, play controls and volume icons, plus a flame icon for burning. Files can be dragged and dropped into the eyeball, then sent to CD-R, hard disk, a Rio portable player, or the Net. MP3 and WMA formats are standard, and there's a 20 to 320Kbps range. The program can operate with VBR. No sampling options are supplied, but slow ripping is available for older drives.



The test track took an average two minutes and 10 seconds, and resulted in an equally average-sounding MP3. If you want cheap and versatile, this is the one.

Pros All-in-one ripper, player and burner
Portable connection
Cons Average output quality
No sampling frequency options

Contact Earjam
Online www.earjam.com
Price Free

HyCD Play&Record 3.1

The Play&Record interface is absurdly easy to use. Right-click on an audio track, click on a destination folder and the job is done. Play&Record adds Copy and Paste commands to Windows Explorer, making ripping a snack. It also has a CD-burning applet, a player, an effects disc and a sampler. The quality at 128Kbps and 44kHz sampling was very good — clear and with little or no detectable clipping. It ripped a 4.1M file in 58 seconds.



The only omission is tag editing, but links to CDDB make up for that. It supports MP3 and WAV formats, and the bit rate can be adjusted from 8 to 320Kbps or VBR. Sample rates vary from 11 to 44kHz, and you can choose mono or stereo. Play&Record is top value.

Pros Fast and easy to use
Well-rounded suite of applets
Cons No tag editing
MP3 ripping only

Contact HyCD
Online www.hyCD.com
Price Shareware

MP3 Home Studio 1.6

Home Studio provides ripping, playing, CD burning and WAV conversion, all using separate applets in the same interface. It's not as cluttered as Sonic Foundry SIREN, and is easy to use. The design looks like early '80s shareware, even down to the choice of skins.



Home Studio uses the two stage WAV/MP3 ripping process. Despite this, it took only one minute and 48 seconds to rip *APC's* test track, which came out at 4.1M.

The playlist option is proprietary, but neat. CDDB information can be downloaded with an external browser. Options include VBR, coding speed and a bit-rate range from 64 to 320Kbps. Auto play-list generation is provided after ripping, and a button offers 'free music' download from MP3.com and e-music.com. This might need updating. Home Studio is a decent package, but it only works for WAV and MP3 files.

Pros Well integrated
Good Web links
Cons No WMA file format

Contact Celestial Software
Online www.mp3homestudio.com
Price Shareware

MP3 Strip_It Digital 5.2

Strip_It has a more accessible menu than Audiograbber and AudioCatalyst. It has an internal Blade encoder and allows external codecs. It doesn't come with a player, but links are available to external utilities such as Winamp. CDDB links and ID tags are supported, but editing capability for the latter is relatively poor. Destination directory options are limited and reasonably restrictive. Stripping options range from 32 to 320Kbps, but there are no sample rate options. Ripping speed and VBR rates can be set, and the program can produce WAV or MP3 output, but not WMA.



Ripping speed was very slow, partly because Strip_It produces a WAV before encoding to MP3. It took a slow six minutes and 30 seconds to produce a 4.09M MP3, but quality and definition were good.

Pros Codec options
Cons Slow and basic

Contact Glacier Software
Online www.glaciersoftware.com
Price Shareware

MusicMatch Jukebox 5.1

MusicMatch Jukebox set the standard in rippers with heaps of skins, unrivalled cataloguing, and ID2 and ID3 labelling. CDDB link options complement the fast, accurate ripper functions, and the playlist and autoDJ options provide unbeatable proficiency. MP3, WAV, WMA, Shoutcast, streaming Net radio and MP2 files are supported, and there is a built-in equaliser plus the ability to download MP3s into Rio and Nomad portables. Ripping options are slightly restricted with only four steps between 48 and 160Kbps available. There are no sample rate options, but VBR is available. Jukebox produced an excellent quality 4.1M track in just under 56 seconds.



Pros Benchmark cataloguing and tagging
Portable player links and Web radio
Cons Limited bit-rate options

Contact MusicMatch
Online www.musicmatch.com
Price Shareware

RioPort Audio Manager 3.2

Designed as an adjunct to Rio portable MP3 players, the RioPort Audio Manager also stands alone as a capable ripper and CD burner. Despite its rather simplistic interface, the Audio Manager includes all the usual functions plus a built-in Web browser for linking to the RioPort site. There's also download capability for the Rio 300, 500 and 600 players, and the Nike psa[Play. Accessing the tag editing functions is laborious, but the options are comprehensive. Despite a generous 64 to 320Kbps bit-rate range, the RioPort only supports WMA and MP3 formats, and has no sample rate options.



Unlike most programs, the RioPort runs a separate check on the CD drive before ripping, which speeds things up. It took just 57 seconds to rip a 4.1M test track, with very good results.

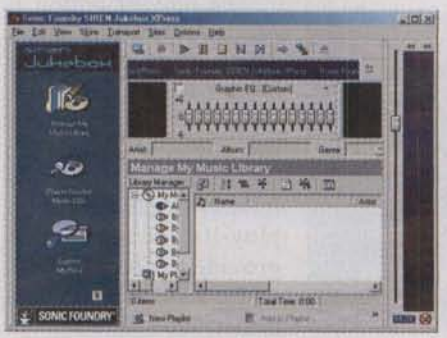
Pros Fast ripping
Simple operation
Cons No sampling options
Limited formats

Contact Sonic Blue
Online www.s3.com
Price Shareware

Sonic Foundry SIREN XPress 1.5a

SIREN's standard interface is busy and cluttered, but it rips well, if slowly. At the standard settings (128Kbps, medium speed) it took three minutes and 26 seconds to produce a 4.1M track. When set to 'fast' this was slashed to about one minute and the quality didn't suffer much, so perhaps the program is drive dependent.

Apart from ripping WMA and MP3 files, SIREN provides probably the best cataloguing, sorting and filtering of library tracks. It also has CDDB links, a decent player with good equalisation options, and the ability to burn direct. It can download tracks direct to Rio players and offers VBR as well as a comprehensive 64 to 320Kbps bit-rate range (but no sampling options). Despite fiddly controls and a cluttered interface, this is a good-quality, capable ripper.



Pros Direct player links
Cons Cluttered interface
No standard ID tags

Contact Sonic Foundry
Online www.sonicfoundry.com
Price Shareware

EasyMP3 1

This is a very simple ripper. Insert an audio CD in the drive, open Windows Explorer and right-click the mouse on the tracks to be encoded. A dialog box pops up with CDDB information, ID3 tag options, bit-rate and file-format options. Select Go and the file is encoded and copied to a default directory, or to a specific destination if you right-click and drag. WMA and MP3 encoding are both available, and the bit-rate range is 32 to 320Kbps. There are no sampling presets, but there are three encoding speeds (fast, medium and high quality).



Set on 'fast', our test track encoded to 4.2M in an impressive one minute and two seconds. The sound quality was good, but lacked some detail. A voice logo is embedded in each file until you register.

Pros Simple, fast encoding
Cons No player option
Voice logo imprint

Contact Proteron LLc
Online www.proteron.com
Price Shareware

Windows Media Player 7.0

Windows Media Player 7 sets a new standard for a Microsoft product: it stands alone, and is easy to use, powerful, and free. It has a cool interface skin set, and simple, effective controls offering playback of CD audio, general media and Net radio. It also offers portable player connection and download, and library options. It only rips to WMA, but it can play back MP3s and a comprehensive range of audio and video file types.



The bit-rate range is from 160 to 64Kbps, but there is no facility to set sampling, level normalising or anything else. Tag editing is also very limited, but CDDB lookup is well integrated. Media Player is very easy to use, and the addition of a graphic equaliser and SRS sound enhancement is appealing to beginners. It ripped our sample track in one minute and six seconds and produced an excellent quality 4.2M file.

Pros Impressive interface
Direct portable downloads
Cons No MP3 ripping or sampling options

Contact Microsoft
Online www.microsoft.com
Price Free

EDITOR'S CHOICE
Australian Personal Computer

MusicMatch Jukebox
Highly commended
Windows Media Player 7

Despite Microsoft's impressive Media Player 7, plus the simple but effective EasyMP3 and Play&Record, the old master is still the best.



MusicMatch Jukebox is definitely the one to have. It's versatile, good looking, easy to use and very fast. With portable player connectivity, state-of-the-art cataloguing and Net radio, it's hard to ask for more. If you are looking for a total solution for PC audio, Jukebox is currently the best all-round bet.

Windows Media Player 7 is a great product — easy to use, powerful and totally free — but it is limited to Microsoft's WMA format.

Who Said the World Really Isn't Flat?

See For Yourself! ViewSonic LCD Monitor



The road to Innovative, Award Winning Technology is led once again by ViewSonic with the introduction of the world's leading LCD Monitor. In offices where space conservation is a concern, and strikingly rich colour is essential, the new flat panel monitor is the perfect solution.

- Space saving up to 75%
- Greater efficiency with less power consumption
- Bright Sharp picture quality, sharp clear images and extraordinary brilliance

For more information, please visit our web site at: www.viewsonic.com.au or call ViewSonic Help Desk on Tel:1-800-880-818

	VP140	VE150	VG151	VP150m
Viewable Area	14.1"	15"	15"	15"
Characteristics	•250:1 Contrast •TCO 99	•350:1 Contrast •TCO 99	•OptiSync™ * •350:1 Contrast •Kensington MicroSaver Security	•SuperClear MVA™ Technology •3X-LCD display •OptiSync™ * •160 ° Viewing Angle

	VP151	VG175	VG181	VP181
Viewable Area	15"	17.4"	18.1"	18.1"
Characteristics	•OptiSync™ * & Video Inputs •Dual USB Hubs	•160 ° Viewing Angle •400:1 Contrast •TCO 99	•OptiSync™ * •160° Viewing Angle •Pivot	•OptiSync™ * & Video Inputs •Dual USB Hubs •Pivot

* OptiSync™ is a ViewSonic® revolutionary new multiple input "sync" technology that features precise display synchronization to any analog or digital computer signal.

Authorized Distributors:

I.T. & e Limited(Original Chips & Bits)
Tel: (03) 9674-6333, Fax: (03) 9686-3144

Ingram Micro Tel: (02) 9741-2000, Tel: 1-300-653-333
Fax: (02) 9741-2001

Synnex Australia Pty Ltd Tel:1-300-651-665, Tel: (02) 8877-9800,
Tel: (07) 3876-7222 , Tel: (08) 9201-9800

Daltron Electronics (Papua New Guinea)
Tel: 675-3256766

Authorized Service Provider 1-800-880-818

3 Year ON-SITE Warranty



ViewSonic®
The Visual Technology and Communications Company™



CD inferno

Whether it's for boring backups or expanding your MP3 collection beyond the realm of your hard disk, few people can get by without a CD burner. Thankfully, the days when CD writers were strictly SCSI, not to mention expensive and slow, are over. ***Alex Kidman*** *assembled a selection of the latest USB and IDE burners and got sizzling.*

To the cognoscenti, the idea of burning CDs on anything other than a SCSI interface is almost heresy. They point out that SCSI offers wider bandwidth, and that most advances in CD-R and CD-RW technology are available as SCSI-only initially. That's fine if you can understand and afford SCSI, but for many computer users, SCSI might as well be in Greek.

For this review, *APC* specified that review units must work using interfaces you could expect to find on an average PC that was not too old, namely USB and IDE. The appeal of using a CD burner on one of these machines has been that they're easier to use — they don't really offer blazing speed — but the gap between these devices and their SCSI counterparts is rapidly narrowing. Two major technologies being taken up by CD-R/RW drive manufacturers make using these drives easier than ever before: the advent of USB, and Sanyo's proprietary BURN-Proof technology.

USB

USB was installed on new PCs for quite a while before there were many devices capable of using it. In *APC*'s March 1999 issue, we ran a review of the USB devices available at the time. The growth in USB was due to two factors. First, manufacturers were unwilling to invest in technologies that no-one could connect to. Second, the popularity of Apple's iMac, with its USB focus, drove the market as consumers demanded peripherals that could not be bought at the time. FireWire finds itself in a similar position now — not many machines have it, and until there are enough that do, the number of FireWire devices available will remain relatively small.

USB for CD burning presents both opportunities and difficulties. USB was designed so that you just plug it in and away you go, which is great for CD burners. The ease with which you can unplug a burner from one machine and take it to another leaves internal drives for dead. The challenge is that the maximum bandwidth of USB, under current specifications, won't support drives that burn above 4x. The upcoming USB 2.0 specification should take this to 8x, but at the moment these drives are comparatively slow.

BURN-Proof

Anyone who's owned a CD-R/RW drive for a while will know how it feels when a disc burn goes wrong. Sometimes it's due to faulty media, sometimes the power just dies, and all too often you get a buffer underrun error, especially when burning at high speeds on systems with slow hard drives.

When you begin burning a CD, the hard drive needs to be able to send data to the drive at least *at* the data speed of the drive, but preferably a little faster. CD drives record constantly and it's not normally possible to stop. So, if your hard drive is busy doing other things such as checking your email or loading a Web page, the data rate to the CD drops. The buffer (usually no bigger than 2M to 4M) is designed to help with these shortfalls — if the data needed is less than the buffer, then it's read from there, and hopefully the hard drive will catch up in the meantime. If not, the laser in the CD-R has nothing to write, and the disc becomes what is commonly referred to as a coaster, because that's about all it's good for. And that's a buffer underrun error.

Sanyo holds a patent on what it calls 'buffer-underrun proof' technology (BURN-Proof). A BURN-Proof drive can pause the data write process and effectively wait until conditions allow the writing to continue. BURN-Proof drives won't save you from every calamity, but they can save an awful lot of discs. It's also possible to record at higher speeds on systems that would normally baulk at such things — after all, if your system encounters a data hiccup, it should be able to recover from it.

The following review isn't comprehensive for a couple of reasons. A number of manufacturers *APC* contacted were unable or unwilling to provide review drives. There is a huge range of drives available on the market; to stand out a drive needs to offer something exceptional. *APC* focused on exceptional drives for our review.

AOpen DRW 4624 DVD Combo Drive



For value for money, it would be hard to go past the AOpen DRW 4624. It's only a 6x drive for CD writing purposes, but it doubles as quite a good-quality DVD drive.

It comes with NTI CD-Maker Pro, a package *APC* hasn't come across before. If you can ignore the rather lame animated Virtual Dan that guides you through the package, it's a solid enough effort. At 6x, we were only expecting a solid performance — nothing spectacular — and the AOpen drive delivered just that with an average 15 minutes burning time. At that speed there were no buffer problems.

The extras in the package are a collection of audio tools and a software-based DVD player, PowerDVD. *APC* was pleasantly surprised by the quality of onscreen images, despite the limitations of our test system. If DVD is important to you, it's definitely worth considering paying the extra money for a good decoder card as well, but basic playback is certainly passable.

Pros Good combination of features
Cons CD-writing software is a little weak

Contact Servex
Phone (02) 8762 3500
Online www.servex.com.au
Price $749

Archos Mini CDRW



The Archos Mini CDRW *is* mini. External drives should be small; the reason people buy external writers is for their portability. However, this product takes it to the extreme.

Connection for the Mini CDRW depends on the model. Archos produces drives that support FireWire and USB, and it promises that a CardBus version will be available soon. All have different writing speeds, and the FireWire one is the fastest with its 8x write capability. The unit *APC* examined was the USB version, which is capable of up to 4x writing.

The review model was Mac-specific, bundled with a copy of Adaptec Toast 4.1. However, a quick trip to Archos's Web site provided PC drivers. This makes the unit a good choice if you need to work across platforms. You'll still need to be careful, as not every CD-writing application chose the drive correctly.

Size apparently does matter, and this unit proves it. To manufacture such a small unit, some compromises have been made. The first is the lid, which bends even under slight pressure. The second is the lock, which must be depressed to start or stop reading.

The Mini CDRW's speed performance was average with a burning time of 20 minutes and 24 seconds. None of the discs failed during testing, but you wouldn't expect them to at 4x.

Pros Incredibly tiny
Cross-platform capability
Cons Weak lid
Annoying lock

Contact MacSense
Phone (02) 9319 2288
Online www.macsense.com.au
Price $749

Hewlett-Packard CD-Writer 8200e



Hewlett-Packard's 8200e is certainly an attractive drive, in subtle white, grey and blue tones. It's a USB drive, and like others of this kind, it writes at a maximum of 4x. It comes with Adaptec DirectCD for CD writing, Hewlett-Packard's MyCD for audio CDs and Corel Print Office. It's the only CD-RW drive *APC* reviewed that comes with a CD-labelling kit. Its inclusion is a nice touch if you're planning to burn a large quantity of CDs.

DirectCD isn't particularly intuitive. It allows for virtual drag and drop on to CDs from the Windows Explorer-style interface, but working out how to initialise discs isn't easy, and multiple disc creation can be quite time consuming.

The 8200e was the fastest of the 4x drives that *APC* reviewed, with an average burn time of 19 minutes and 29 seconds, 30 seconds faster than comparable units. There were no errors on the discs created during testing, but even our test system should be able to create flawless copies burning at 4x.

Pros Good price
Includes CD-labelling kit
Cons Could have better burning software

Contact Hewlett-Packard
Phone 13 13 47
Online www.hp.com.au
Price $599

Iomega ZipCD (internal and external)



Iomega submitted two drives for review: the familiar USB external drive that's been part of its range for some time, and the newer internal 10/10/32 ZipCD drive.

The external USB ZipCD is very distinctive; you won't fail to notice its bright purple casing. Its USB connectivity limits it to 4x recording. The unit is a bit weighty to carry around, but this extra weight means there is almost no vibration when operating. This can be a benefit when writing to less-than-perfect media. Its speed was average for a USB CD-RW drive with a burn time of 20 minutes.

The internal Zip CD was quite another matter. Like the Shintaro drive, it's capable of 12x writing due to the inclusion of BURN-Proof writing. *APC* was able to see this in action during testing, as the buffer dropped dramatically at one point, then collected itself and resumed writing — normally, we would be left with a shiny coaster at that point. Writing speeds were good, with an average of just over 10 minutes. That's slower than the Shintaro, but that's probably because it runs CD Creator rather than the Shintaro's speedier Nero application.

The Iomega drives include Adaptec's Easy CD Creator, which is a good tool for novices, but not very fast when it comes to writing, as the testing results at high speed show.

Pros Fast BURN-Proof internal drive
Portable and stable external drive
Cons Heavy external drive
Fairly slow writing speeds

Contact Iomega
Phone (02) 9925 7700
Online www.iomega.com
Price USB $569, IDE $590

Shintaro CDRW120



The Shintaro CDRW120 drive blew *APC* away at first sight. There aren't many drives that come with 20 blank CD-Rs and a carry case to hold them in. However, we passed on listening to the CD of 101 free MP3s that came as part of the package.

The Shintaro CDRW120 drive, like many of the other drives currently available, is a rebadged Teac drive with a 2M buffer. When you combine as little as 2M with a 12x write drive, you'd expect to make a lot of coasters if the drive didn't include BURN-Proof technology.

The CDRW120 comes with Nero 5.0, an excellent CD-writing package that is known for its speed. Consequently, the CDRW120 blitzed the competition, recording all the discs in six minutes and 52 seconds. This was a revelation after far too many 20-minute-plus burns.

Normally, using a 12x drive with a machine which has specifications as low as our testing machine's would be a disaster, but the Shintaro managed it without a tremor or spoilt disc on the way. Unlike the similar BURN-Proof Iomega drive, the buffer didn't even twitch below the 90% mark, which was very impressive. It's even quite inexpensive.

Pros Fast and reliable
Cons None that we could find

Contact Multimedia Technology
Phone (03) 9419 6600
Online www.shintaro.com.au
Price $649

EDITOR'S CHOICE
Australian Personal Computer

Shintaro CDRW120
Highly commended
- Archos Mini CDRW
- Hewlett-Packard CD-Writer 8200e

The Shintaro drive has just about everything you could want in a simple IDE drive. It's fast and reliable, and it comes with heaps of extra goodies that complement the package. It's also cheaper than most of the other drives *APC* tested except the 8200e, and about three times as fast.

The Archos Mini CDRW is as portable as you can get with a CD-RW drive. It was a close call between this and the Hewlett-Packard 8200e, and in the end *APC* decided both drives deserved commendation — the Archos for its multiplatform appeal and portability, and the 8200e for its low price and good writing speed.

How we tested

APC Labs looked for two things in the CD drives we tested. First, they should be easy to install and run. Second, as with any CD-RW drive, speed matters.

APC tested the drives by burning a group of five CDs with 641M of data on each. Total burn time was measured, and times were then averaged across each drive. Any failed discs were noted, mindful that failures can be a fault of the medium rather than the drive. All discs were then checked to ensure that data copying was flawless. Any additional functions or features, were also tested.

Our test machine for all drives except the Archos Mini CDRW was a Compaq Presario 350MHz Pentium II with 96M of memory. This isn't an exceptional machine; quite the opposite, and deliberately so. New CD-R users, especially those on a budget, are unlikely to have the latest and greatest machines, and testing these drives on a slower machine tests their buffering capabilities in a way that a newer machine with faster memory and hard drives won't. The Archos Mini CDRW was tested on a G4 450MHz Macintosh running System 9.

GOT THE DESIGN BUG?

Get the knowledge



BEGINNERS

This step-by-step guide will walk you through the basics of designing and building a Web site.

2 CDs Free full working versions of NetObjects Fusion 4.0, Paint Shop Pro 4.14 and BladePro, plus HTML editors, browsers, powerful utilities.

ADVANCED

- Learn how to enhance your site with features including advanced HTML, scripts (JavaScript, PHP and CGI), multimedia and ecommerce.
- **2 CDs** Free full working verions of Sausage's HotDog Professional 5.5 and Xara 3D 1.0, as well as HTML editors, browsers, utilities and tools.

FROM BEGINNERS TO ADVANCED, ENHANCE YOUR WEB DESIGN SKILLS

LET THE WEBMASTERS POCKETBOOK SERIES GUIDE YOU TO THE ULTIMATE WEB DESIGN

Special offer **Purchase both these Pocketbooks for only $30 (inc GST) and save $10.**

[pb] pocketbooks **Online at magshop.com.au or phone order on 13 61 16** ACP Tech

The TLA scourge

One of the most popular marketing approaches used in the corporate IT sector is to assign a gratuitous three-letter acronym (TLA) to whatever concept the software company in question is eager to promote. In this issue, David Braue examines the state of one of those concepts — enterprise resource planning, commonly known as ERP. Intensive and hype-driven marketing saw ERP widely adopted in the run-up to Y2K as the ideal way of replacing ageing systems on the verge of collapse. However, David Braue reveals it hasn't always lived up to its promises in the quickly changing world of ebusiness.



Not all TLAs fare so badly. Another concept which came into widespread use at around the same time as ERP was enterprise application integration, inevitably abbreviated to EAI. EAI generally describes middleware used to help weld individual applications into a potentially seamless whole. As such, the demand for EAI products should reflect the rate at which new applications are being introduced. And the verdict? EAI is still hot.

According to at least one research firm, EAI shows no signs of slowing down, despite the more cautious approach to introducing new systems which has been so evident in the post-Y2K environment. According to the Meta Group, the EAI market is still expanding by 90% annually, with no immediate prospect of slowing down. That movement is being driven chiefly by CRM and procurement initiatives, a move Meta sees as a direct reflection of the better return on investment (ROI) available from such systems.

That doesn't mean that EAI purchases will necessarily be straightforward — such packages are not cheap — but Meta argues that financial justification for this category is still relatively straightforward. Many other TLA category technologies might wish they could have such an easy ride.

Contents

This month in Corporate IT

ERP
Hang on to your hats — ERP is making a comeback. 104



Vive la revolution
Why, it's Paris 1968 all over again. The students are revolting — where will it end? 111

Patch Panel

The Patch Panel section on CD 1 of *APC*'s cover CD pack includes the latest patches and updates for a wide range of operating systems and applications. Check page 14 for details.









ERP: OUT OF THE ASHES

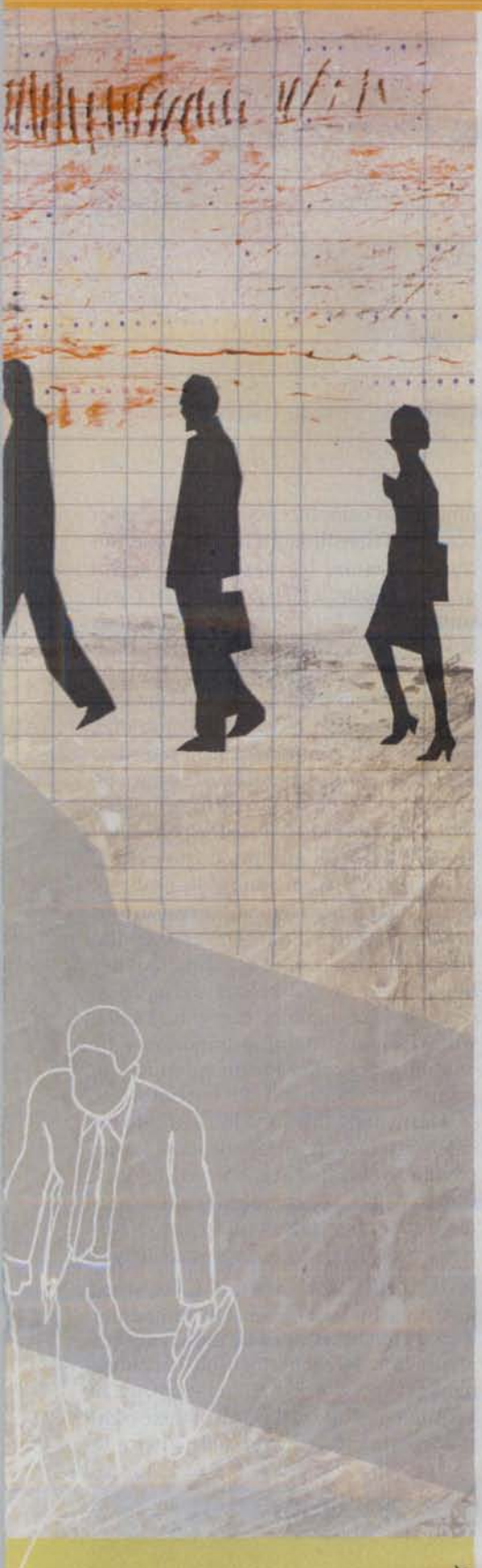


Illustration by Warren Taylor

Enterprise resource planning (ERP) software was the darling of the application industry in the late 1990s, but then it crashed. ***David Braue*** *investigates ERP and discovers a phoenix in the ashes.*

In the beginning there was MRP (material requirements planning). That became MRP II, which evolved into ERP (enterprise resource planning). This was then bolstered by CRM (customer relationship management). CRM became ERM (enterprise relationship management), which enabled SCM (supply chain management). SCM became the foundation for ebusiness, and ebusiness has spawned eprocurement, emarketplaces, c-commerce (collaborative commerce) and, most recently, what is becoming known as ERP II.

And that's just over the past six years.

Finding it hard to keep up? You're not alone. Vendor-driven 'marketectures' are nothing new, but the speed at which ERP companies have developed their solutions has created a strategic and philosophical gap between them and their customers. For customers, each new paradigm requires years of strategic planning and implementation, plus investments of millions of dollars.

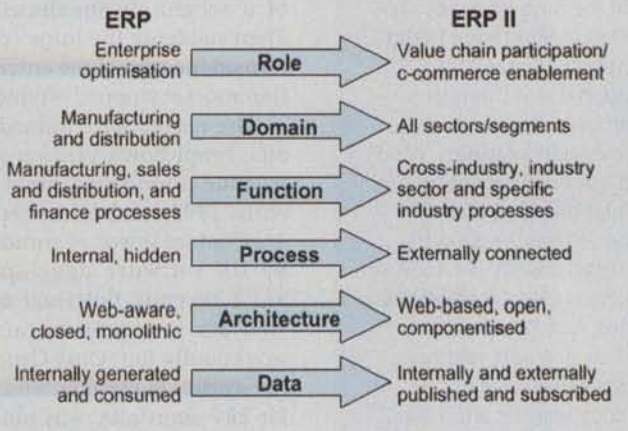
As a concept, ERP attracted companies keen to avoid Y2K problems, replace decade-old inhouse solutions or purchase completely new business systems. ERP's promise of reduced overheads, increased efficiency and business process optimisation sent it to the top of most companies' strategic budget considerations. It was quickly seen as an essential tool for providing the data automation infrastructure necessary to do business in the 21st century.

Never mind that ERP was big, clumsy to implement, finicky about issues such as data quality and exporting data, and a sure way to tie up IT budgets and staff for months, if not years. Many companies, assuming that their consulting and implementation partners or the ERP software would do the hard work, waded into ERP deployments that quickly became impossible. Companies realised that their business processes and existing data were in no shape to meet the future. This led to far too many companies' budgets blowing out by more than a year and tens of millions of dollars, with little to show for it.

It was the kind of market that most businesses dream of: lucrative product licensing revenue was being paired with even more lucrative implementation and service contracts from companies that found it too difficult to build an enterprise system from scratch.

Between 1997 and 1999, ERP businesses were flying high. The JBOPS cartel — comprising market leaders JD Edwards, Baan, Oracle, PeopleSoft and SAP — controlled about two-thirds of the fast-growing ERP market. The remainder of the market was picked up by second-tier players such as Intentia, Epicor, QAD, Great Plains Software and SSA. ERP companies were the powerhouses of the enterprise software business, with market capitalisation and revenue expectations unequalled in other industry segments.

The transition from ERP to ERP II



Source: Gartner Research

IT meets ERP



With revenue of $2.6 billion last year, Tech Pacific is the Asia-Pacific region's largest distributor of information technology and telecommunications products. Its rapid growth in recent years has taken it into New Zealand and six other countries across the region. However, with this has come the complexity of managing a fast-growing and rapidly changing business. Tech Pacific has offered EDI-based ecommerce interfaces for partners since 1996, but in late 1999 it recognised that its 15-year-old Pick-based ERP system was waning.

Ebusiness has become essential to Tech Pacific's everyday operations, and existing EDI and ecommerce interfaces are meeting its needs well. However, when looking for a better back-end system last year, the company underwent a rigorous evaluation process. It settled on Intentia's Movex ERP platform, which it is about to start implementing on the AS/400 platform and plans to begin trialling in New Zealand by October. Vendors usually like to push the whizz-bang online capabilities of their platforms, but Tech Pacific Group CEO David Arnott said his team has always been quite clear about what they wanted and hasn't bought into the hype.

"It is much more cumbersome for us to do things in an EDI ecommerce environment," Arnott explained. "Our selection process was very specific regarding the functionality we wanted, distribution, warehousing, sales and marketing. We already do ebusiness, but we're looking at a much more sophisticated system so we can input data from other systems and minimise some of the administrative processes our current system can't cope with. We've already got an ecommerce interface for our customers, and very specialised CRM doesn't fit in the ERP solutions yet, so we have a CRM project running in parallel to this."

The corporate sector cheered the champions of the new business order. For example, US firm AMR Research predicted compound growth rates of 32% for ERP. It predicted the market would grow from $US16.6 billion in 1998 to $US66.6 billion two years from now. It expected CRM to grow to $US11.5 billion by next year, and the equally fast-growing SCM market was expected to jump to $US18.6 billion by 2003.

Heading off disaster

In early 1999 warning signs began to flash as corporate customers delayed purchasing decisions or finished ERP implementations and hunkered down to weather the expected storm. Almost every ERP company saw a massive slowdown as licensing revenue fell through the floor and consulting services suddenly became a lifeline for survival.

For some, the sudden decline in new ERP contracts was a major surprise. To others, it was the inevitable consequence of greed and short-sightedness. Focused on the swill trough they'd made for themselves, ERP companies basked in the glory of a seemingly inexhaustible market. Then suddenly the large companies that formed the core of the enterprise application market stopped buying.

The results were immediate and serious. PeopleSoft's year-on-year licensing revenue plummeted more than 60% in early 1999, and Baan reported a 30% drop before it was eventually purchased by UK software developer Invensys. SAP's revenue flattened after enjoying 70% per year growth, and JD Edwards was equally flat. Only Oracle, which has the world's leading database to make up for ERP shortfalls, was able to buck the trend by increasing licence revenue, albeit by just 5% compared to the 25% rise it had expected.

Impending completion of Y2K-related ERP projects wasn't the only problem affecting the market, according to Kristian Steenstrup, research director for ERP and supply chain management with Gartner Asia-Pacific. "For a brief time, people thought they could live with one company in a biosphere," he explained. "But the Y2K period was bad for ERP companies because there were significant questions raised about return on investment, given that, in many cases, the companies needed to reinvest to rehabilitate the systems."

"A more important and telling factor was that ebusiness became an initiative in the organisation, but ERP companies didn't adapt to this. There was a fair



amount of complacency in the customer base, and they thought the back end was fairly immune to these changes. But architecturally, ERP systems aren't well suited to an Internet-focused business environment. They're inherently introspective, whereas Internet-based business is inherently externally focused," he said.

Revenue was suddenly harder to find, so large ERP companies were forced to court small and medium-sized businesses. They offered industry-specific templates that were supposed to take the pain out of ERP implementations. Hoping to expand beyond their traditional strengths in transaction processing and areas such as human resources management, they also embarked on a rash of acquisitions. They hoped these would bolster strengths in areas such as manufacturing and CRM, which was fast gaining importance by enabling customer-facing interfaces to complement back-end ERP systems.

Many companies also latched onto the emerging concept of application service providers (ASPs). They believed the best way to reduce the complexity of ERP was to host it themselves and charge customers for access to the systems. Buoyed by the belief that ASPs and CRM would save them in the long run, ERP companies were all but blind-sided by the emergence of previously niche-focused ebusiness players such as Ariba, Commerce One, i2 Technologies and Siebel. All of these companies showed a remarkable ability to



▲ Siebel's chief technical officer, Bill Edwards

.OnMyWeb.net

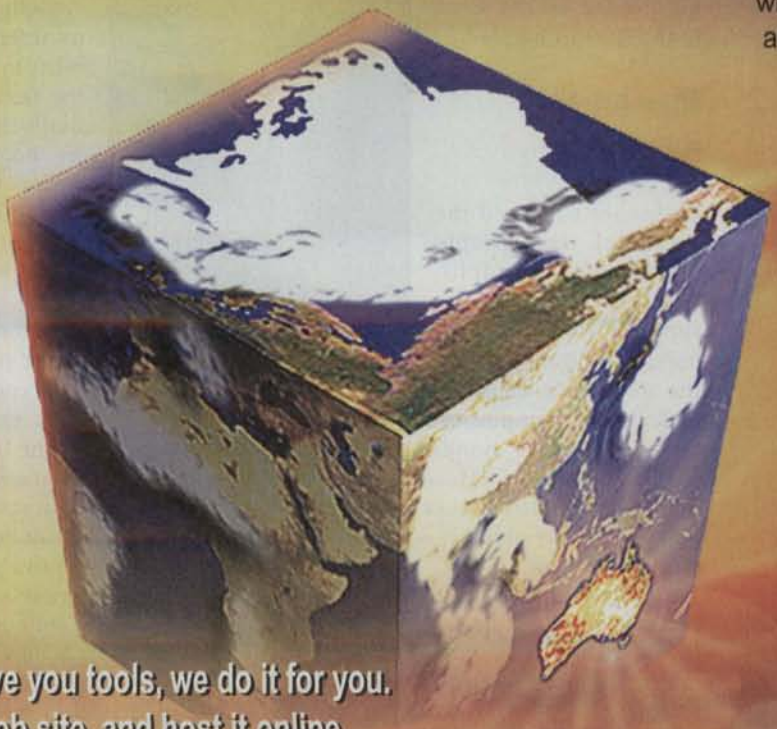
A subsidiary of
Accsoft Internet Services

ACCSOFT

Providing Quality Internet
Services Since 1995
with access points in all states
and territory around Australia

The dawn of a new era

It's a game of Quick and Slow, not Big and Small!
Put your business online, not on the line!
Not just a web site, *OnMyWeb* Site!



BusinessTotalConnect
Permanent Line: 24 hrs ISDN/Modem
Office Saver: 12 hrs/day option
name@*yourcompany*.com.au
www.*yourcompany*.com.au

Dial-up 56K Access
Reliable and fast
No download limit
On-web mail access
6 e-mail addresses per user
Prepaid by hours, no use-by date
with frequent user bonus, or
Prepaid by months, all you can surf

http://www.accsoft.com.au
Please check our web site or ring
for coverage and service details.

We don't just give you tools, we do it for you.
We build your web site, and host it online.
We place your site under busy traffic, so business comes quick.
We process your online money, with bullet proof security.
We help in order fulfilment, as well as management.
We let you take *control, which areas* at your site visitors can go.
We connect you to the net, and show you what to do step by step.
We are talking about a piece of cake, not an arm and a leg.

Simply Experience the Difference

http://www.onmyweb.net

Suite F1 Citymark Bldg, 683-689 George St, Sydney NSW 2000
Tel: (02) 9281 8163 Fax: (02) 9281 8621

Open 7 Days

ERP more than enough for Bulla

Regal Cream Products manufactures ice cream, sour cream and related products under the brand name Bulla. It implemented an ERP system from Baan last year to improve its visibility. Previously, the company had relied on an ad hoc collection of spreadsheets and faxes, but wanted an automated solution to improve the situation.

Within 10 weeks of signing the contract with Baan, Regal Cream Products was live with finance, sales and inventory modules. Later it added capabilities such as process manufacturing and service maintenance. Transport, lot and location control and an overarching quality control module will complete the company's ERP implementation. General manager of corporate services Phillip Alexander said it will be some time before the company needs to look beyond the capabilities of its ERP.

"We've gone from no information to more information than we can handle," Alexander said. "We're learning a lot more about our sales, and have a much better picture of our business in the market. We're making money where we weren't, and we're starting to get some good information on materials performance."

Ebusiness will come into the picture a little way down the track. "We've got to finish the implementation to derive all the benefits from it. At this stage, ebusiness isn't a big part of our operation. Most of our customers ring their orders through or use EDI. We deal with a lot of small suppliers and customers, and ebusiness is the last thing on their minds. I don't think it will fully be part of what we're doing for the next few years," Alexander said.



grow in niche markets where ERP was severely limited.

"We saw this slowdown in ERP coming four years ago," Siebel's chief technical officer Bill Edwards said. "We were amazed that a few ERP players didn't take those signs a bit more seriously. We recognised that it would be much more efficient, and provide better support for customers, to extend ERP outside of the organisation, so customers and partners could have access to a subset of data. But we never took our position for granted, as did some of the ERP businesses."

New market dynamics

Businesses still need the financial and people management capabilities that ERP provides. However, the technology barely gets a mention in the marketing messages of software companies. Sensing far larger margins in areas such as ebusiness and CRM, companies have quickly moved to distance themselves — psychologically at least — from the pain of the past year.



▲ SAP Australia/New Zealand deputy managing director, Julie Fahey

SAP moved decisively to strengthen its pedigree as an online service provider by investing in eprocurement company Commerce One and signing a CRM reseller deal with Nortel Networks' subsidiary Clarify. MySAP.com cashed in on the emerging portal trend to create an online initiative which remains at the core of SAP's new market approach.

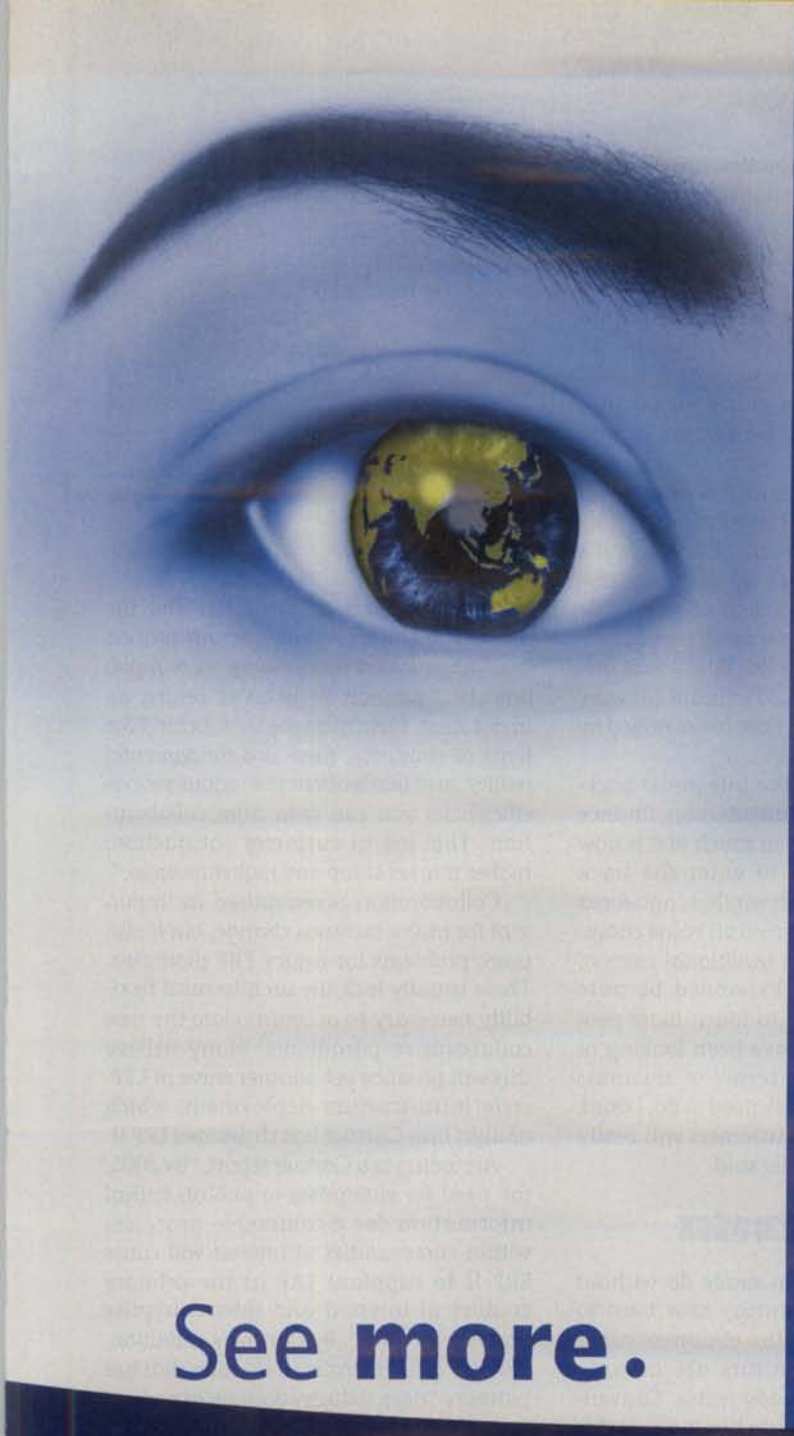
Despite its new look and marketing focus, SAP Australia/New Zealand deputy managing director Julie Fahey was quick to point out that ERP is still a major part of the equation. "ERP is the foundation of this infrastructure because you've got your key business processes that need to be supported," she said.

"In conversations with customers, I've watched a maturing of their understanding. It's not a shift, but an intention from the back office to incorporate more of the front office. The thing that's changed for us is that we have competition in each of our niche areas."

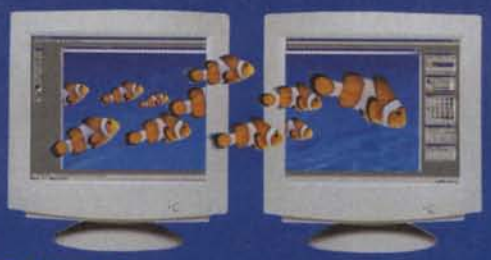
ERP businesses were pre-eminent in the late 1990s, but they're now just one of many online application providers. Revenue rebounded in the latter part of 2000, as did new contracts from companies emerging from Y2K hangovers. Still, the timbre of the market has changed perceptibly. Now, smaller competitors in areas such as CRM and online procurement hold the cards, as customers look to turn ebusiness rhetoric into deliverable business benefits.

This market shift has opened up opportunities for midrange ERP businesses that had previously subsisted on scraps left by the JBOPS. With few development and financial staff to throw at the problem,





See **more.**



Extend
DualHead Multi-Display lets you extend your applications across two monitors.



Zoom
DualHead Zoom lets you focus on the finer points of your work.



DVDmax
DualHead DVDMax lets you output high resolution DVD movies directly from your PC to your TV.

Do **more.**

New!

Millennium G450

DualHead EMBM



Expect more from your graphics card.

The new Matrox **Millennium G450** gives you the unprecedented 2D / 3D / DVD image quality you've come to expect from Matrox. Matrox DualHead lets you run two displays with a single graphics card. The new Millennium G450 can handle all your display needs for now and for the future.

FOCAL POINT COMPUTING

Australian Distributor
Focal Point Computing Pty Ltd
(03) 9372 6600

Over **900** Awards

matrox
www.matrox.com/mga

Council ebusiness



After 70,000 assessments and a budget of $160 million, the Wollongong City Council has chosen SAP's hosted MySAP.com solution for moving its operations online.

Previously, specialised local government software from Sandersons subsidiary Genasys had been adequate for administering the council's operations. However, at the beginning of 2000 it recognised that a better platform was necessary to deliver advanced customer interaction services. The implementation team is currently putting SAP in place and plans a November start.

"We have a strong desire to ensure we're ecommerce enabled. Local government these days is becoming more and more complex, and there's more and more demand placed on it," general manager Rod Oxley said. "We want to provide a round-the-clock service to the community. There's been a lot of talk about best-of-breed solutions, picking up various finance or HR packages and sticking them all together through integration, but we felt that process was fraught with difficulty. MySAP.com's fully integrated software solution will drive us into ebusiness, and give us a lot more flexibility than we've had in the past."

Specific applications for the platform will emerge over time, he said, but the platform's key benefit is knowing that the combination of ERP and ebusiness enablement will provide a solid foundation for the future. "More and more businesses are looking at electronic business opportunities," Oxley said. "It's early days for us to identify all the benefits and directions we're going to take, but I think there's enough scope in the product to satisfy our needs for the foreseeable future. It's opening up horizons that we might not otherwise have envisaged."

these midrange companies are creating partnerships to gain instant competency in online applications.

For example, SSA Global Technologies — whose BPCS ERP product has a strong and loyal following in the discrete manufacturing midmarket — has signed on six key partners in areas such as business intelligence, supply-chain planning, eprocurement, online marketplaces, data collection and CRM.

Increasing functionality is essential if midrange businesses are to compete successfully in the market. "Although it's healthy, ERP really has no glamour anymore," senior vice-president of worldwide marketing and corporate development with Epicor John Hiraoka said. Epicor was created from the merger of Platinum Software and Dataworks just in time to get nailed by the market's slowdown.

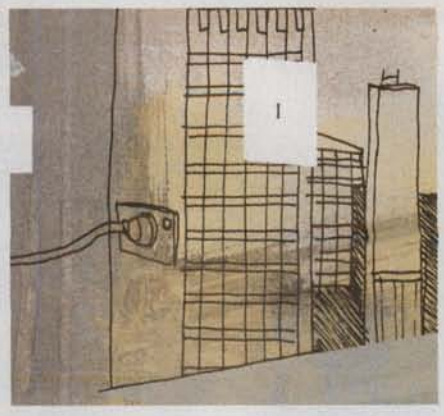
"We still provide the integrated back-office applications in distribution, finance and manufacturing, but much of it is now allowing customers to enter the back office, extend that with wireless, and focus on suppliers and their overall value chain. The things that touch traditional users of these systems have expanded because companies are trying to touch more people, and customers have been looking at their challenges in terms of business processes and what they need to do. I think this is the year that customers will really start to understand," he said.

The customer paradox

Many companies that made do without an aggressive ERP strategy now need to get up to speed with the ebusiness capabilities their competitors are already implementing or already using. Conventional ERP businesses are hoping that this need will increase adoption of ASP-based ERP solutions, which supposedly provide faster implementations of core ERP solutions. More than half a dozen ASPs already offer rentable ERP services in Australia. However, the ASP model has not yet caught on with customers.

Many companies are choosing to rely on experienced integration partners whose rapid ERP deployment methodologies may give them the jump on competitors. Instead of creating unrealistic expectations by looking to the past, companies need to set shorter timeframes with defined goals.

"There were some disappointments as to the promise of ERP," conceded PeopleSoft director of emerging markets Andrew Clay. "ERP is the core, but companies need an application set that is sympathetic to use by the wider enterprise. Typically, this now



includes suppliers or customers. But the massive business re-engineering process has finished, and we're seeing more rapid, bite-sized projects with faster return on investment. Customers see that, behind the hype of ebusiness, there is a fundamental reality, and that's about the serious process efficiencies you can gain from collaboration. This led to customer satisfaction, higher market share and higher revenue."

Collaboration is recognised as important for major business change, but it also poses problems for legacy ERP platforms. These usually lack the architectural flexibility necessary to accommodate the new collaborative paradigms. Many believe this will produce yet another wave of ERP-style infrastructure deployment, which analyst firm Gartner has christened ERP II.

According to a Gartner report, "By 2005, the need for enterprises to publish critical information for c-commerce processes within communities of interest will cause ERP II to supplant ERP as the primary enabler of internal and inter-enterprise process efficiency". By Gartner's definition, ERP II is a collaborative extension that ties partners' "deep industry domain expertise" to core modules including accounting, purchasing, order entry and costing.

However, this transition into collaborative commerce could be as difficult for businesses as the quick turn from ERP to ebusiness. Gartner believes ERP II will come through a series of incremental upgrades. However, it warns customers off companies with few development resources and products that integrate the Internet at the margins instead of as a core enabler.

"In an evolving market, names are going to change over time," Gartner's Steenstrup said. "What's comforting is that everyone's starting to recognise that there's a change going on. Eprocurement and emarketplaces are only the tip of the iceberg, an experimental prototype of what ebusiness can be. It's the next plateau, and it will change over time. But this is the real thing."

Students control the broadband

In one Melbourne college, students have overthrown the IT officer and taken network administration into their own hands. ***David Braue*** *spoke to the ringleaders of the broadband revolution at the University of Melbourne's Whitley College.*

Universities maintain scores of technical engineers to handle the complexities of networks spanning many thousands of nodes and multiple campuses, but residential colleges are private enterprises and generally have to make their own arrangements.

The University of Melbourne's Whitley College found a rather unconventional solution to its IT cost problems in 1998; it replaced its high-priced technical consultant with a small group of students who proposed to do a better job for free.

The students began administering the college servers in the mid-1990s. In 1997, the college's IT committee was formed under the leadership of Bachelor of Computer Science student Ben Fon. The students inherited responsibility for the administration of the college's FreeBSD and Windows NT servers and the maintenance of its eight-system computer lab. The committee was already the de facto technical support group for dozens of Whitley residents, so the transition was smooth.

The committee members argued that the college should put the money it saved on a technical consultant into upgrading its IT infrastructure to help position Whitley as a technical leader among the university's colleges. Fon and his peers eventually won over Whitley's then dean, Dr Philip Mosely, who convinced the college council to shell out $100,000 to wire its buildings with fibre-optic cable.

As a result, IT became a part of everyday life at Whitley. Last year, about 90 of the college's 135 students connected their PCs to the college's intranet. This gave them constant, unlimited, 10Mbps Internet access through the university's link to the high-speed academic AARNET backbone. So many students have been keen to work free in exchange for the experience that Whitley's intranet has rapidly become a social and administrative centre for the college.

Tedious paperwork has now been moved online. This saves on administrative costs and is convenient for students, who can fill out forms whenever and wherever they want. Even seemingly simple uses have saved money for the college. For example, student access to the online White Pages and Yellow Pages means that the college no longer pays someone to shift new phone books in and out of each room every year.

Students have come up with some far more interesting uses for the intranet. Last year, the college replaced the front door security camera with a Webcam. Footage is broadcast continually over the intranet and the video is archived on to an 80G drive. The buzzer has also been set up to send a signal across the intranet to the on-duty tutor, so the residents aren't bothered in the middle of the night by errant buzzers.

In another project, students programmed database links to the local tram operator. Students can check the intranet to find out when the next tram will pass the college. One student is even working on how to link the washing machines up to the intranet so that waiting times can be displayed online.



▲ Ben Fon led the IT revolution at Whitley College.

These applications may seem quaint, but they've contributed to a massive change in the culture of the college. However, it hasn't been easy. The IT committee has had to deal with broadband overuse, the need to document information regularly, high staff turnover due to graduation, and many other challenges that face more conventional IT organisations. A formal help desk was set up last year to assist students with technical problems, and committee members spend several weeks before each semester preparing for incoming students.

APC spoke with Fon and Mosely to find out more about Whitley's long-running experiment in IT and social engineering.

APC: *What was the IT situation when you started working at the college?*

Mosely: I came on board at the end of 1994 and inherited an old Macintosh system for the staff and some very old Macs and PCs for the students. It was so bad that we decided we had to do something. We could have gone the whole hog and gotten fibre-optic, or chosen something more modest. We preferred the more modest option, but student expectations started to rise very quickly as fast links and modems became common in school leavers' homes.

APC: *How did this change?*

Mosely: In 1996/97 it was a major thing to get the council to spend $100,000 on cabling, but it was eventually happy to provide the means because it was determined to become a college of excellence.

I did have worries that I'd have a college of students just looking at their flickering screens, and that nobody would communicate unless they sent an email. But we found that the computer lab got more use. Even though students had computers and the Internet in their rooms, they liked to socialise. They would sit down with noise all around them and it didn't worry them. The students were intelligent and discerning, and they knew what they needed.

APC: *How did you end up ditching your outside IT consultant?*

Fon: When I came in 1997 there was a loose IT committee, but I organised that into a formal IT group consisting of four to five students interested in IT. At the time, very few of us knew much about running a full network and servers, so we spent 1997 learning everything. We basically taught ourselves to the point where we could take over from the external contractor, then in 1998 we went to the college administration and said, "We're looking after it all ourselves and we don't need him."

Mosely: IT officers were expensive, but colleges had grown used to them. We saw the IT committee as a marvellous way of catching up, and it was certainly what the students needed. It was very much about giving students the chance to put into practice what they were learning, and it

SUBSCRIBE



Australia's longest-running and top-selling computer magazine

- 100% local content
- First reviews of the hottest new products
- Detailed features on the impact of technologies
- Dedicated testing facilities at APC Labs
- Hands-on advice in Workshop
- Leisure and pleasure in After Hours

12 ISSUES FOR $79

apcmag.com

Complete card and mail to:
APC
Reply Paid 3357
Sydney NSW 2001
(No postage stamp required if posted in Australia)

Fax your order:
(02) 9267 4363
(24 hours a day)

For immediate service, use the Customer Service Centre:
13 61 16
Monday to Friday,
8am to 8pm EST,
Saturday
8am to 6pm EST

Published by ACP Tech, a division of ACP Publishing Pty Limited ACN 053 273 546

ACP Tech

Australian Personal Computer
AUSTRALIA'S LEADING TECHNOLOGY MAGAZINE

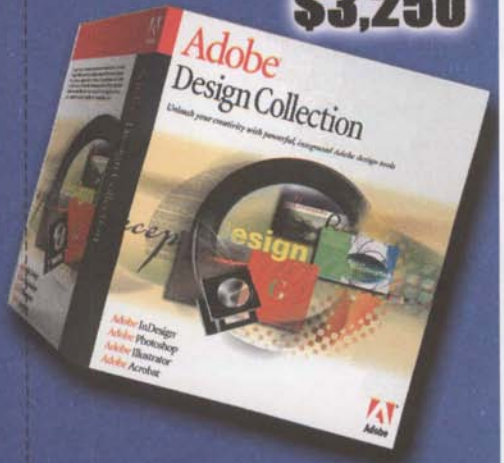
3 WAYS TO SUBSCRIBE AND SAVE

Call 13 61 16 and subscribe
Subscribe online at magshop.com.au
Send in the attached subscription card

TERMS AND CONDITIONS

1. Information on how to enter and prize forms part of these conditions of entry.
2. Entry is open to all residents of Australia who subscribe to *PC User* between 12/03/01 and 08/04/01 and *Australian Personal Computer* between 12/03/01 and 17/04/01. Entry is subject to a valid signature against a valid credit card or, if payment is made by cheque, the cheque must be cleared for payment. Subscriptions are to be sent to APC, Reply Paid 3357, Sydney, 2001 or PC User, Reply Paid 3357, Sydney 2001; or freecall 13 61 16. Employees and their immediate families of the Promoter and its agencies associated with this promotion are ineligible.
3. The draw will take place at ACP Tech, Level 9, Stockland House, 175-183 Castlereagh Street, Sydney, NSW 2001 at 11am on 19/04/01. Winners will be notified by mail and their names will be published in the Public Notices section of the Australian on 27/04/01. The Judges' decision is final and no correspondence will be entered into.
4. The first two valid entries drawn will each win an Adobe Design Collection package valued at $3,250 each.

Subscribe to APC for your chance to win the Adobe® Design Collection valued at $3,250



www.adobe.com

Delivery Address:
GPO Box 3357
SYDNEY NSW 2001

No stamp required
if posted in Australia

Australian Personal Computer
Reply Paid 3357
SYDNEY NSW 2001

Australian Personal Computer
AUSTRALIA'S LEADING TECHNOLOGY MAGAZINE

Payment details:

I have enclosed a cheque/money order for $_____ (12 issues) made payable to ACP Direct

OR

Please debit my credit card for $39.50 now and $39.50 for each six-month period from then on.

To ensure I receive uninterrupted delivery of my *APC* magazine, please renew my subscription each period upon expiration at the same fee unless otherwise agreed. Unless I cancel my subscription I understand my subscription will continue and the account nominated above will be automatically billed.

❍ Bankcard ❍ MasterCard ❍ Visa ❍ Diners Club ❍ American Express

Card number:

Expiry Date ____ / ____

Signature

Mr/Mrs/Miss/Ms Initials Surname

Street Number Street Name

City/Town/Suburb

Postcode Daytime Phone Number

Offer expires 17/04/01

Source Code: APCB0401

- **APC (12 issues) Australia** **$79** (inc. GST)
- **APC (12 issues) New Zealand** **$115** (inc. GST)

For free mailing, put in an envelope and mail to:
APC, Reply Paid 3357,
Sydney NSW 2001
(No postage stamp required if posted in Australia.)

For more immediate service,
visit www.magshop.com.au
or ring the Customer Service Centre
(13 61 16) Monday to Friday 8am to 8pm
EST, Saturday 8am to 6pm EST.

Published by ACP Tech, a division of
ACP Publishing Pty Limited
A.C.N. 053 273 546

ACP Tech

AND WIN!

Subscribe to APC for your chance to win the Adobe® Design Collection

Valued at $3,250

The Adobe Design Collection delivers four inspiring products in one complete package.

- **Illustrator 9's precise vector graphics tools will transform your ideas into original artwork.**
- **Photoshop 6 allows you to design and edit rich, layered images.**
- **Use InDesign 1.5 to assemble compelling page layouts with remarkable ease.**
- **Acrobat 4 converts documents to Adobe Portable Document Format (PDF), allowing them to be sent out for review or printing, or posted to a Web site.**



The Adobe Design Collection provides the freedom to unleash your creativity and the power to produce professional results.

Visit our Web site at www.adobe.com.au

Total prize pool is $6,500. Prize is not transferable or exchangeable and cannot be taken as cash. Any change in the value of the prize occurring between 01/01/01 and the date the prize is claimed is not the responsibility of the Promoter.

5. The Promoter shall not be liable for any loss or damage whatsoever that is suffered (including but not limited to indirect or consequential loss) or for any personal injury suffered or sustained in connection with the prize except for any liability then cannot be excluded by law.

6. The Promoter may conduct such further draws at the same place as the original draw as are necessary on 06/08/01 in order to distribute any prizes unclaimed by that date subject to any written directions given under Reg 37 of the Lottery and Gaming Regulations 1993 (SA).

7. The Promoter accepts no responsibility for late, lost or misdirected entries.

8. All entries become the property of the Promoter. All entries will be entered into a database and the Promoter may use the entrants' names and addresses for future promotional, marketing and publicity purposes unless otherwise advised by the entrant.

9. The Promoter is ACP Publishing Pty Ltd (ABN 18 053 273 546) of 54-58 Park Street, Sydney, NSW 1028.

NSW Permit No. TC01/1215 Vic Permit No. 01/406 A.C.T. Permit No. TP01/0483 N.T. 0/5012 S.A. T01/456

became an excellent tool for the students which they used to the full.

APC: *How does the committee's structure compare with a conventional IT organisation?*
Fon: One of the things we always joke about is that we have all the major problems of an ISP or corporation, without the resources or manpower. The IT Committee comprises a very dedicated student body, and they're willing to teach themselves until they can overcome problems.

The committee tends to be pretty free-flowing — it's pretty much a case of "if you think of something cool, go ahead and do it". The top four people would make decisions on the fly, not because they're trying to be autocratic, but because they've got to get things done faster. The work that's done in the college is very close to a lot of the stuff that's done in the real workplace; for instance, we had a problem with the amount of downloading.

APC: *People with unlimited access to broadband can get a bit carried away. Did you have any problems with students abusing the resources you provided?*
Mosely: Our IT expenditure went up enormously, corresponding with usage, and it didn't seem to be levelling off. It wasn't because students were downloading music videos or other unnecessary stuff. There was just an all-round increase in usage. However, we are governed by the university's rule that Internet usage must be for educational purposes. We found that because we knew where people were going and were vetting it, we had discreet control over it and could make sure that it was being used legitimately for education.

If someone was accessing a site we didn't want them to, we would prod them gently, but the number of times this happened were very few. There are social standards and we had filters; the IT committee was vigilant in establishing standards and the students responded magnificently. My impression is that it has worked very well around the colleges, and we've built on what schools have been doing in terms of self-discipline for students. There's nothing like saying "you won't have an account if you abuse it."
Fon: One of the guys in the IT committee created a packet-counting script that logged how much each person was downloading and uploading. If it went over 150M per day we told them, "If it's educational we don't care, but if it stays over that we might have to cut back." We have a firewall set up to block Napster's ports, but to make it fair we've got a common server where people can store files. That way, only MP3s made from students' CDs are on the internal network, which is the same as if they were trading them.

APC: *How do residents react to the fact that students are running the show?*
Mosely: The student point of view was essential to the way we directed the project. I was always conscious that I should not presume what students want to know; you've got to refer to them continually. But the IT committee was able to give our Web site a spin where members knew from their own recent experience what students wanted.
Fon: Every year, the college gets feedback on what students think is great about the college, and for the past three years the support and IT facilities have been at the top of the list. Students are getting more computer literate as the years go by, and generally, IT committee members are able to provide them with the support they need. They've never experienced permanent, free broadband connections, and students talk among themselves and teach each other new things. Probably the most difficult thing is getting them to dream big enough.

APC: *How do you ever get time to study?*
Fon: It's actually quite challenging at the start of the year. In 1998 and 1999 another IT committee member and I put in 10-hour days to get it going — installing servers, configuring accounts and so on. But we found it interesting because we were getting experience in the same area as we were studying.

These days, the number of students available to assist us has increased dramatically. Now there are about 15 students in the IT committee, four of whom are senior members running the servers. The others are learning the skills necessary to support the systems.

APC: *Has all this fiddling about had any practical side effects?*
Fon: I finished my degree in 1998, stayed another two years as a tutor and de facto IT officer, then got a job at IBM Global Services Australia. The key people that have been heavily involved in the IT committee have all gone out and gotten jobs in big corporations; one has gone to work for GE Information Services, and others with the ANZ and Bendigo Bank, as well as Melbourne University. These jobs were a direct result of the work we've been doing at Whitley.



Thinking laterally

Not so long ago, PCs came in nothing but the proverbial beige box. If you didn't like the sober exterior, it was spray paint and stickers or nothing. Boxes are not all as daggy as they used to be, but there's still not much available for the really adventurous — unless you're prepared to think laterally. This month's **Just DIY** column introduces three lateral thinkers who took up the challenge and built a PC case entirely out of Lego.



This isn't the only challenge this month's Workshop tackles. Getting games to run properly under Windows 2000 certainly qualifies as a challenge, but the speed and stability gains make it worth the effort. Our **Windows** column offers some useful advice on running games under Windows 2000.

Step by Step also has some good advice this month, with a guide to improving the sound quality of your PC's speakers. Whether you're limited by space or spare cash, there's always something you can do to improve your speaker performance.

Workshop readers who want to access email from their handhelds will find this month's **PDAs** column especially valuable. How you configure your handheld for email depends on your email needs — do you want access anytime and anywhere, or do you just want to access email sent to your desktop PC? PDAs takes you through the options and shows you how to get the most out of the configuration you choose.

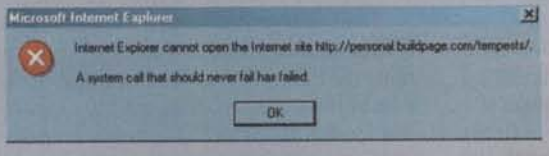
Getting the most out of your computer technology is what Workshop is all about. Check out the other regular columns in this month's issue (listed in the box at right) for more useful advice and information.

Workshop is a reader-input section. Please send your ideas, comments or criticisms to workshop@acptech.net, or to our snail mail address APC Workshop, PO Box 4088, Sydney NSW 1028.

Bug of the month

Never underestimate computers! What is impossible today could become possible in the future. Artificial intelligence, stable operating systems, cheap DSL access, system calls failing . . .

Hang on, that last one might be here already.



Kudos to bug spotter 'jfainges' for achieving that most difficult of tasks: making Internet Explorer misbehave.



downright weird software bugs you can find. These include code snippets, features that function poorly, or things that crash a particular application. Anything and everything buggy deserves mention.

Send us your favourite bug via email to bugs@acptech.net or snail mail to APC Bug of the month, PO Box 4088, Sydney NSW 1028, and you'll be in the running to win a software prize. Please send screen captures, example code listings or detailed instructions to trigger a bug in an application, as appropriate for your entry.

The winner's name, along with details of the bug, will appear in this column in *APC* June. So start hunting!

Michael Smith

Win! Win! Win!

Workshop is always on the lookout for the most interesting, strange, funny or

Contents

This month in Workshop

5 Minute Guides explore speech recognition software and advances in lithium ion batteries. 116

Bibliofile reviews books on searching the Net, networking home computers and solving Linux problems. 120

Turn to **Just DIY** to find out how three friends combined their Lego engineering skills and computer know-how in one exciting project. 123

Step by Step shows you how to get the most out of your speakers. 126

Learn how to optimise the Windows 2000 platform for gaming and see how you can make use of Active Desktop in Windows 98 in our **Windows** column. 128

This month's **Linux** shows you how to update edited files quickly and easily using the patch command. 132

Find some useful tips on sending and receiving emails from your handheld device in **PDAs**. 134

Set your Internet preferences in the Mac OS Internet control panel with the help of the **Mac OS** column. 136

Use PHP's dynamic graphics capabilities and **Insite**'s tips to build a flexible menubar. 138

C++ starts a new project this month: building a school roll program with different file types. 140

Begin exploring the mechanisms and language structures of abstract data types in our **Java** column. 142

Once thought impossible, speech recognition by computers is now an affordable goal.

Ditch the keyboard

How can a computer understand your voice?

When you use a speech recognition program, the sounds your voice makes are picked up by a microphone attached to your computer and turned into digital information. The software contains a database of sounds and whole words, along with typical patterns of speech. It compares your digitised voice with the database and displays the matches it finds as text on the screen. The computer has no understanding of what you are saying; it simply converts noise into data.

What is speech recognition technology used for?

People do most of their communicating with speech, but are confined to hitting little plastic keys when they're interacting with machines. Speech recognition software aims to replace the keyboard by allowing you to use the natural medium of speech to dictate your text instead of typing.

Most commercial speech recognition packages focus on word processing, but many support voice control of your computer's other functions. Potentially, there are also many industrial applications.

The biggest consumers of speech recognition software are people with a reputation for hard-to-read handwriting — doctors, lawyers and business people, who otherwise dictate to human transcribers. People with physical disabilities are another obvious and important market. People who suffer from repetitive strain injury (RSI) caused by typing are also keen users, as are those who want to avoid developing it.

What are the limitations and how can they be overcome?

A few years ago, people using speech recognition programs had to speak . . . very . . . slowly . . . into their microphones. Several packages are currently available that can handle normal conversation speed. Early packages were often designed for use in North American markets, and required extensive customisation before they could handle other accents.

When you first install a speech recognition program, you are asked to read some text to it so that the program can get used to your voice and pronunciation. This improves accuracy (often to over 95%), but using a version of the software built specifically for your national accent can also help a great deal.

Speech recognition software is normally used simultaneously with standard business applications such as word processors, but to work efficiently they need a lot of processing power and RAM. Ideally, the sound database is loaded entirely into RAM, so that the program isn't slowed down by having to search for speech patterns on the hard drive. As sound can be distorted by background noise, a new generation of digital 'array' microphones is now available to improve sound capture.



Why are people still using mice and keyboards?

The trouble with voice recognition software is that computers are still designed for push-button control. Some things are much easier to achieve with a keystroke than a series of spoken words, especially when many words sound the same, such as 'pear' and 'pair'. Artificial intelligence can recognise contextual use of words and guess when you mean 'pear', but this requires even more number-crunching power. However, as the average office worker's typing speed is well under 50 words per minute, and people talk at 80 to 150 words per minute, there is plenty of scope for development.

Welcome to 5 Minute Guides

5 Minute Guides is a new regular column in Workshop explaining how technology works in question-and-answer format. Each month we'll run a Five Minute Guide on a basic topic and another on an advanced topic. If there's something you'd like to see covered, let us know via email at workshop@acptech.net.

What's the state of play in the speech recognition industry?

The three biggest providers of speech recognition software for PCs are Dragon Systems, IBM and Lernout & Hauspie. Dragon accounts for over 60% of the market, but the company was purchased from Jim and Janet Baker by Lernout & Hauspie in March 2000. However, poor financial management saw Lernout & Hauspie file for Chapter 11 bankruptcy in November last year, shortly after being delisted from the Nasdaq. Despite its financial woes, its products are still available.

There are many other companies developing speech recognition packages for different industries. One such example is the call centre industry. Sydney's Taxis Combined has ordered a telephone reservation system that recognises Australian speech patterns. Even Microsoft is planning to incorporate speech recognition into upcoming versions of Office.

The biggest challenge for speech recognition remains the development of systems that actually understand and act on commands, rather than merely translating speech into text. This could require a radically different approach. Current systems rely on enormous matching dictionaries to produce results. Many linguists (who study the science and structure of languages) argue that a system based on the way people learn language and based around a small set of rules is required rather than a large set of examples, but their approach has not yet resulted in commercially viable systems.

Angus Kidman

SUCCESS ... !

with MSI's award winning mainboards.

The MSI new mainboards, packed with loads of features and advantages, will uplift most systems to a faster level of performance. They are outstanding products for today's computing.

MSI mainboards are the symbol of perfection and represent the success of MSI's ability to deliver cost-effective products that satisfy most applications and users' demands.

NEW FEATURE*
USB [PC2PC] connection.
Easy online access.

PC 2 PC

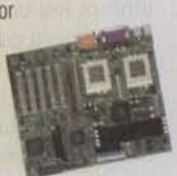
MSI proudly presents its latest feature – USB [pc2pc] connection. Users just need to own a MSI motherboard that supports this feature by using one USB cable.

It can easily conduct data transfer and back up, internet access, peripheral sharing, net meeting, ethernet emulation, home networking and mobile computing.

* Conditions apply. [PC2PC] connection is not included in all products. Please check before ordering.

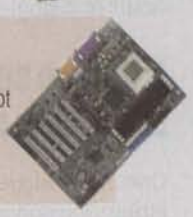
MS 694D Master–S

- Support Dual FC-PGA PIII Processor
- Support Dual channel Ultra 3 SCSI
- Suport AGP Pro and 4DIMM Slot
- Support PCI2.2 and D-Led (Diagnostic LEDs)



MS Pro266 Master–R

- Support Intel PIII and VIA Cyrix processor
- Support 3 DDR and 2 SDRAM slot
- Support ATA100 and IDE RAID
- Support PCI2.2 and D-Led (Diagnostic LEDs)



MS K7 Master–S

- Support Athlon 200/266FSB processor
- Support AGP Pro and DDR SDRAM
- Support Dual channel Ultra 3 SCSI
- Support PCI2.2 and D-Led (Diagnostic LEDs)



MS 815EP Pro–R

- Support Intel PIII up to 1GHz
- Support ATA100 and IDE RAID
- Support AGP Pro
- Support PCI2.2 and D-Led (Diagnostic LEDs)



MS 8815 Pro

- Ge-Force2 GTS Pro
- 64M DDR SGAM
- TV-Out as standard
- Bundle with MSI 3D Tool



MSI MICRO-STAR INTERNATIONAL
Link to the Future

For more information visit our website
MICRO-STAR INTERNATIONAL
www.msi.com.tw
MSI COMPUTER AUSTRALIA PTY LTD
www.msicomputer.com.au

© Micro-Star International 2001. All brand names are registered trademarks of their respective owners. These specifications are subject to change without notice.

Also Technology
NSW/ACT Tel (02) 9519 4600
VIC/TAS Tel (03) 9560 3388
QLD/NT Tel (07) 3357 4300

INGRAM MICRO
Tel 1300 65 3333
Fax 03 9545 3326

Tech Pacific
Leaders in Technology Distribution
Tel 1300 650 159
NCC Fax 1300 650 393

How will new technologies help to increase battery life?

The chemistry is right

What are polymer batteries?

Most portable electronic products (including notebook computers and mobile phones) use lithium ion batteries. These eliminate some of the memory problems associated with nickel cadmium batteries, but they still can't be made as small as manufacturers would like, especially for the mobile phone market, where any reduction in size means significant marketing advantage.

In an attempt to produce smaller, longer-lasting batteries, researchers began experimenting with a technology known as lithium ion polymer. These batteries draw their power from a polymer cell which can be as small as 1mm (lithium ion has a lower limit of around 5mm). This allows for much more compact batteries, or greater power (and hence longer running times) from similar sizes to those currently used for lithium ion batteries. A single lithium ion polymer cell can generate a power output of 3.4V, compared to the 1.5V output standard battery cells can produce. It is claimed that some lithium ion polymer batteries can be designed to run for as long as 15 hours in a single session.

If they're so great, why aren't we seeing more of them?

One of the biggest challenges in designing lithium ion polymer batteries is temperature control. The batteries work best if they can run at a constant temperature, but this isn't always easy to maintain, especially on devices that may make sudden demands for large amounts of power (such as a PDA waking from sleep mode). When overheated, lithium ion polymer batteries can swell up to four times the size of their predecessors. Overheating can also reduce the number of times the batteries can be recharged.

There are also some other pragmatic considerations to take into account. As a relatively new technology, the manufacturing capacity for such batteries is limited, and they are substantially more expensive to manufacture.

What do polymers have to do with ALB?

Notebook giant Toshiba is developing a range of a technology known as ALB (advanced lithium batteries). Strictly speaking, ALB technology is polymer based, but the underlying concept is similar, as a polymer-like gel is used for conductivity within the battery.

ALBs produce a similar cell size to lithium ion polymer batteries, and it's slightly cheaper to manufacture, but it is still more expensive than current lithium ion batteries. One advantage of ALB is that the batteries may be less susceptible to the heat problems experienced by standard lithium ion polymer batteries. Whether that will convince Toshiba's notebook rivals to adopt the technology remains to be seen. (Toshiba also worked on pure lithium ion polymer technology, but has since abandoned it.)

Who is producing polymer batteries?

At the moment, polymer batteries (and similar approaches such as ALB) remain largely in the prototype stage, but various polymer products have been available since 1997. Research on the technology is being conducted by large companies such as IBM, Motorola, National Semiconductor, Sanyo and Toshiba. However, much of the initial work has been carried out by smaller companies specialising in power technology, including Danionics, Electrofuel, Lithium Technology (Illion), Thomas & Betts, and Valence Technology. One of the more notable examples of lithium ion polymer batteries in use is in the Compaq iPAQ handheld.

Where can I get some?

Many smaller companies such as Electrofuel offer standalone battery packs using lithium ion polymer batteries, but few of these have been released commercially in Australia. Many notebook manufacturers are waiting for cost reductions before committing to the technology.

Toshiba launched its ALB range commercially in February this year (although manufacturing on a smaller scale had been going on for more than 12 months), and they are already being used in a number of mobile phones. However, even Toshiba doesn't expect to be using the batteries widely in notebooks until some time in 2002. Nonetheless, the company is predicting that by the end of this year it will be shipping 3 million batteries per month.

Also in February, Motorola and National Semiconductor announced a partnership to develop protection and energy management systems for use in both conventional lithium ion and newer lithium ion polymer systems. The two companies have filed over 15 patents relating to the technology, but haven't yet announced a release date for any commercial products.

Is lithium ion polymer the only way forward?

Not necessarily. US company Moltech is working with lithium sulfur technology, which it claims can be placed in a battery cell as small as a few hundred microns. Such batteries have inherent overcharge protection and don't use heavy metals such as cadmium, which makes them easier to dispose of. However, they have not yet gained a lot of support from original equipment manufacturers.

Angus Kidman

What is a polymer?

A polymer is a large molecule consisting of repeated chemical units joined together in a line; the analogy of beads on a string is often used to describe them. Many modern plastics are composed of polymers, and most life forms also comprise polymerised chains of amino acids, proteins and other substances collectively known as biopolymers. Polymer research is one of the most active fields of chemical study, and it has provided us with a neat new battery technology.



Viewmaster™

A Screen More than Just Flat



Viewmaster 17" Flat Screen Monitor

The Viewmaster F7EAT flat screen monitor with no corner distortion on full-scan display has ultra-high resolution and all functions controlled by an on screen display. The advanced DDC1/DDC2B I/O port provides a convenient plug and play feature for Window 9X/2000 systems.



Viewmaster L5CDS LCD Monitor

The Viewmaster L5CDS LCD monitor provides crisp, flicker free, high contrast images using tearless frame rate conversion accepting a wide range of frame rate frequencies to provide perfect moving pictures. 1024 x 768 resolution at 16 million colors. This product is specifically suited for financial, medical and logistic business applications with a significantly reduced footprint, negligible radiation, low power consumption, high-resolution capabilities and superior image quality to deliver the most comfortable display.

Proudly Distributed By

HALLMARK
COMPUTER INTERNATIONAL

Melbourne	ph: (03) 9540 8555	fax: (03) 9540 8989
Sydney	ph: (02) 9748 8811	fax: (02) 9748 8866
Adelaide	ph: (08) 8340 3740	fax: (08) 8340 3745
Darwin	ph: (08) 8948 4451	fax: (08) 8948 4450
Perth	ph: (08) 9477 5440	fax: (08) 9477 5450

www.hallmark.com.au sales@hallmark.com.au

3 years on site monitor warranty (excluding LCD monitor): conditions apply Melbourne, Sydney & Adelaide metro only.

Quality System

Quality Endorsed Company

ISO9002 Lic. 8670 Standards Australia Melbourne & Adelaide

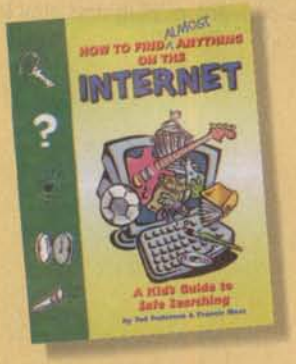
All booked up

Search the Net, solve your Linux problems, network your home computers, and more.

How to Find Almost Anything on the Internet

This is one of a series of computer books for children by Pedersen and Moss, and is the companion volume to *Internet for Kids*.

The book is broken up into short, easy-to-read chapters with boxed glossaries, tips and notes. There's good information on how search engines work and how to perform different types of searches. The US bias is very apparent in the selection of search engines and in most of the examples presented. The final two chapters explain how to search for people and newsgroups, but only in the US and with no proviso on the safe use of such information. A sensible parental introduction gives guidance on



Internet safety, but the book fails to live up to the promise of its subtitle, *A kid's guide to safe searching*.

The patronising CyberSarge character is likely to put off some children, as many have plenty of exposure at school to searching for information.

As a cheap book for beginners, this may be worth buying as a general resource, but Australian children seeking information for school projects or about their hobbies and sports need Australia-oriented search engines and Web indexes. Consequently, the usefulness of this book is limited.

Catherine Howard

Author Ted Pedersen and Francis Moss
Publisher Price Stern Sloan
Contact Penguin
Phone (03) 9871 2400
Price $9.95
ISBN 0843175931
Rating ■■■■■■■■■■

The Internet from A to Z

This pocket-sized guide to the Internet is aimed at new Net users or people who are not yet online but are interested in finding out more. The clear and concise writing style is perfect for beginners.

The book has two sections. The first covers Internet basics, such as how to get connected, how the Internet is structured, hints for effective search methods and explanations of useful applications for the Internet. The application section will stimulate the more inquisitive, as it includes details on broadcasting over the Internet, video on demand, MP3s, media players and mobile connections.

There are plenty of Web site references for you to investigate once you're online,



and while many are US and UK sites, they do provide an insight into what's available.

Part two is a comprehensive Internet dictionary accompanied by screenshots. They are only small, but they help to explain the terms.

New Internet users will find useful information in the appendices, which cover explanations of shorthand for emailing, a summary of emoticons (small pictures created from keystrokes), and an explanation of error messages and file extensions.

The Internet from A to Z provides all you would expect in this type of guide.

Cathie Kennedy

Author John Cowpertwait and Simon Flynn
Publisher Icon Books
Contact Allen & Unwin
Phone (02) 8425 0100
Price $9.95
ISBN 1840462248
Rating ■■■■■■■■■■

The Linux Problem Solver

Like other No Starch Press titles, *The Linux Problem Solver* claims to be a 'fat-free' guide to troubleshooting real-world problems faced by Linux systems administrators. The book is concise and provides a fast-paced walk through a Linux server system.

Throughout the book, text boxes provide information about common problems known to occur with different aspects of the OS, their symptoms, and known solutions. For intermediate professionals working with a large number of end users, the book serves as an informative guide to improve your skills and solve real-world problems.

The Linux Problem Solver is technically sound and up to date with the older ker-



nel 2.2, but has a limited focus and only covers tools common to every Linux distribution. For example, the common Linux implementation of NIS and SMB are very well covered, but email, Web and FTP servers aren't mentioned at all. Likewise, installing software from source occupies a whole chapter, but packaging systems aren't covered.

Despite these omissions, the book provides clear, concise explanations and the troubleshooting guides work very well for the content that is covered.

Mike MacCana

Author Brian Ward
Publisher No Starch Press
Contact Woodslane
Phone (02) 9970 5111
Price $69.95
ISBN 1886411352
Rating ■■■■■■■■■■

The I.T. Industry Wants You...



But can you handle the salary?

The demand for skilled IT staff is escalating by 25% a year - far outstripping supply. IT pay scales average 20 - 40% higher than their equivalent business counterparts.

Getting "Certified" is your ticket to an exciting IT career. Industry specific certifications such as Microsoft Certified Professional (MCP), Microsoft Certified Systems Engineer (MCSE), Certified Novell Engineer (CNE), A+ or Network+ Certification and Certified Cisco Network Administrator (CCNA) represent advanced levels of attainment that are highly sought after both in Australia and overseas.

Your Options

Get trained and get going - it's that simple! But which training method is going to be best for you? Training from a book can work if you're already an expert and just looking to fill the gaps before you sit the exams.

Going to seminars? There's a lot of information to try and absorb at once. How much is remembered long term? Instructors often assume you have a good understanding of the subject before you even start - then there's the time out of work, not to mention the cost. What about self-paced training programs? Overwhelmingly the preferred method of preparing for certification exams according to MCP (Microsoft Certified Professional) Magazine.

With LearnKey you study at your own pace, at your own place and in your own time. LearnKey is affordable and you now get 24/7 one-on-one support.

LearnKey Training Rated Best in the Industry

Self-paced training means you can study in your own time and at your own speed. No need to quit work and take up study full-time - you control the schedule. With LearnKey you get repeatable training, round the clock mentoring and help from eSupport - you are assigned to a personal tutor whose job is to help you get certified!

Each LearnKey training kit consists of four components: Training Guides - comprehensive industry-recognised reference/study books.

Interactive Training CD-ROMs - an expert tutor leads you through a comprehensive overview of the course. The CD-ROMs utilise simulated software exercises and challenges to ensure you fully understand each concept covered.

MasterExams - simulated practice exams containing hundreds of questions that will assess your readiness to sit the real exam.

eSupport - access to your own personal online tutor to answer any questions you may have and help you to stay focused on exam preparation. The eSupport web page provides further study resources and helps bridge the gap between 'theory' and the 'real world'.

Certification courses range in cost from $325 upwards...So if you're serious about investing in your future there's no better way than LearnKey.

Demand for Skills Escalating

The Australian Information Industry Association estimates that the current skills shortage is 30,000 positions. John Roberts, research director at GartnerGroup, expects that the IT market will grow at the rate of 30,000 per year, which will mean that the skills shortage is expected to continue for the next five to ten years.

Corporate IT Magazine June 2000

Enhance Your Career - Now

"The most in-demand people are those with advanced skills in Windows 2000" stated a recent article in the IT section of the Sydney Morning Herald. Your ticket to the hottest IT career around is to get certified.

Remember, vendor certifications are recognised internationally. You'll receive peer recognition and IT industry status.

LearnKey recognise that time and money can be limiting factors when it comes to getting qualified but if you are going to invest in something it is smart to invest in yourself. LearnKey can help you realise your potential.

LearnKey has the complete solution. Request our free information package and discover how we can help.

eSupport



It's like having a personal trainer at your disposal 24 hours a day 7 days a week!

"eSupport gives trainees using our self-paced course materials the added confidence of access to a personal tutor and a website that keeps them informed of the latest developments in certification - significantly enhancing their study process" says Managing Director, Robert Gordon.

YES, Please contact me to discuss my training needs and organise for a FREE demo CD-ROM.

Full name:

Business:

Address:

P/code:

Telephone:

Facsimile:

1-800-229933

or fax (07) 3841-2618

info@inlearning.com.au

This Wired Home

The number of homes containing more than one computer is growing, thanks to falling hardware prices, home-based businesses, telecommuting, people taking work home at night, and schools with notebook computer programs.

Once you have multiple computers at home, the advantages of connecting them with a LAN become obvious. Neibauer explains these advantages clearly and simply. The book looks at sharing resources such as Internet connections, printers and folders, plus messaging, games and intranets.

It's surprising that 10BaseT networking doesn't have a stronger recommendation than 10Base2, because it is generally more robust and built-in Ethernet connections are most often RJ45 sockets. Some of the technologies covered aren't relevant to Australian conditions, and a more extensive coverage of broadband routers and security issues concern-



ing permanent Internet connections would have been preferable.

Since this is a Microsoft Press book, it's not surprising that it is Windows-centric. Several key topics are platform independent and Chapter 16 provides good coverage of mixing Windows PCs and Macs on a network. Linux doesn't get a look-in.

This is a useful and practical guide, but there could have been more coverage of issues relevant to readers outside the US.

Stephen Withers

Author Alan Neibauer
Publisher Microsoft Press
Contact Woodslane
Phone (02) 9970 5111
Price $65
ISBN 0735611580
Rating ▮▮▮▮▮▮▮▮▮▯

Foundation Flash 5

Aimed at beginners as well as users of previous versions of Flash, this book is a comprehensive introduction to the latest instalment of the leading Web graphics package: Macromedia Flash 5.

Starting from the very basics of the Flash 5 interface, the book takes you step by step through the uses of each tool, the symbols, content management, working with text and bitmaps, tweening, using masks, and adding interactivity, sound and scripting. Rather than getting bogged down in the details or skimming over them, it provides just the right level of explanation to make everything clear. Just about everything you would ever want or need to be able to do in Flash is explained in a straightforward way.

One of the impressive features of this title is how well it covers the design and programming aspects of Flash. It details the use of Bezier curves and animated masks, and it also has two chapters on basic and advanced ActionScript con-



cepts with example code. The examples can be understood even without the software running in front of you, thanks to screenshots on almost every page.

Unfortunately, there are notes on what to do when things go wrong. This is not a major shortcoming, but it would have been a worthwhile addition to this other-wise excellent manual.

The $69.95 price tag is what you'd expect to pay for any 600-page computer manual these days.

Daniel Potts

Author Sham Bhangal, Amanda Farr and Patrick Rey
Publisher Friends of ED
Contact McGraw-Hill
Phone (02) 9415 9899
Price $69.95
ISBN 1903450314
Rating ▮▮▮▮▮▮▮▮▮▯

PC Hardware in a Nutshell

A PC hardware reference would have to be one of the most challenging subjects for a book, especially one that aims to cover buying guidelines and building your own PC from scratch. However, the O'Reilly 'in a Nutshell' range has a very solid reputation for successfully dealing with difficult subjects. This book is no exception.

Of its 26 chapters, three are dedicated to the basic components and procedures for working on, designing and building a PC. The remaining 23 chapters focus on particular devices such as motherboards, hard drives, CD drives, processors, and power supplies.

With a definite focus on the Windows 95/98 operating systems, the hardware coverage is unsurpassed, but Linux users may need additional references when installing device drivers for their hardware.

PC Hardware in a Nutshell is an excellent reference if you want to learn more



about PC hardware or you find yourself up to your elbows in computer parts on a regular basis. Every possible point of interest is covered. Even subjects like overclocking are addressed. Hands-on techniques like salvaging data from floppy disks with a razor blade give the book a really good DIY feel. This is an excellent resource for PC users with a bit of experience who are keen to take the plunge and dive inside the box.

Daniel Potts

Author Robert Bruce Thompson and Barbara Fritchman Thompson
Publisher O'Reilly
Contact Woodslane
Phone (02) 9970 5111
Price $69.95
ISBN 1565925598
Rating ▮▮▮▮▮▮▮▮▮▯

For a complete archive of Bibliofile columns, visit apcmag.com.

Why not jazz up your PC with a case built out of Lego?

Build your own Lego PC

PC design has a little more pizazz than it used to, but most models are still fairly tame. What if you want something really different — something with a bit of flair?





Three Australian 19-year-olds, Carlo, Glen and Pokey, took on the challenge of building a computer case made entirely from Lego.

The plan

The plan to build a Lego computer case was hatched when the trio heard that records had been set for making large objects from Lego. Inspired, they decided to try something similar with a computer. A quick search of the Web turned up someone who had made a Lego case that stood over a metal PC case, but they couldn't find anything made entirely from Lego. The group decided to attempt their own Lego case, calling it the Woo Lego Project (www.woo.nu/lego).

The PC was a Pentium with 64M of RAM, a 4G hard drive, SCSI card and scanner. Nothing unusual was added or removed from the machine; the main board, graphics card and soundcard were all standard design. The PC was also equipped with 10/100 Ethernet ports and a slot-loading CD drive.

The aim was to remove the metal case and cover the machine in Lego, taking care to construct it so that it could be moved without breaking. The PC needed to be sturdy as it was occasionally moved around and used as a roving LAN server for games and Internet access.

Let the work begin

Once enough Lego had been found, the team had to decide how to begin building the case. Instead of simply taking off the metal case and laying down Lego, the PC was turned upside down so that the heaviest components — the power supply, CD drive and hard drive — were located at the base of the machine. They hoped that this would result in a sturdier structure.

The next task was to start building with the Lego, piece by piece. The challenge was to make the walls strong, and at the same time avoid trapping too much heat, which could cause the machine to break down and the Lego to melt. This looked like it might be a problem at one stage, but when the machine was tested there was no overheating.



According to Carlo, "We had to build the Lego around each item so that it wouldn't move, but so heat wouldn't be trapped. I was worried about the power supply and hard drive getting enough airflow, but after running them for a short time, it was clear it wasn't a big deal."

Lego was used to build the walls and also to support the hardware inside the case. The only metal used was on the back of the motherboard. Little walls were built from Lego to hold up the PCI cards. "The machine was a complete rebuild. Nothing was as it is in a normal case — that way the whole thing was stable," Carlo said.



Bits and pieces

Once most of the walls were built, the process started to get tricky. The main problem was replacing the standard AT power switch (moulded onto the case) with a Lego version. A piece of Lego was found that would act as the button (a pirate's map), and it was built into the switch. The button had to be strong enough so it wouldn't break, but loose enough so that the power connection would work properly.

The next problem was devising a way to allow access to CD drives, ports and other components through the Lego case. The trio came up with the idea of a panel in the Lego wall that could be opened on a hinge. The door was built on the side of the PC, and opened up to reveal the motherboard, CPU cords and hard drive. However, if the team decided to upgrade the power supply, this level of access could pose problems.

The result

The whole process took two days to complete, and to everyone's surprise, the machine was quite sturdy. It was first thought that the system would need to be lashed to a board to keep it intact, but it turned out to be so strong that it can be lifted safely by holding on to its sides, as long as it's done carefully.

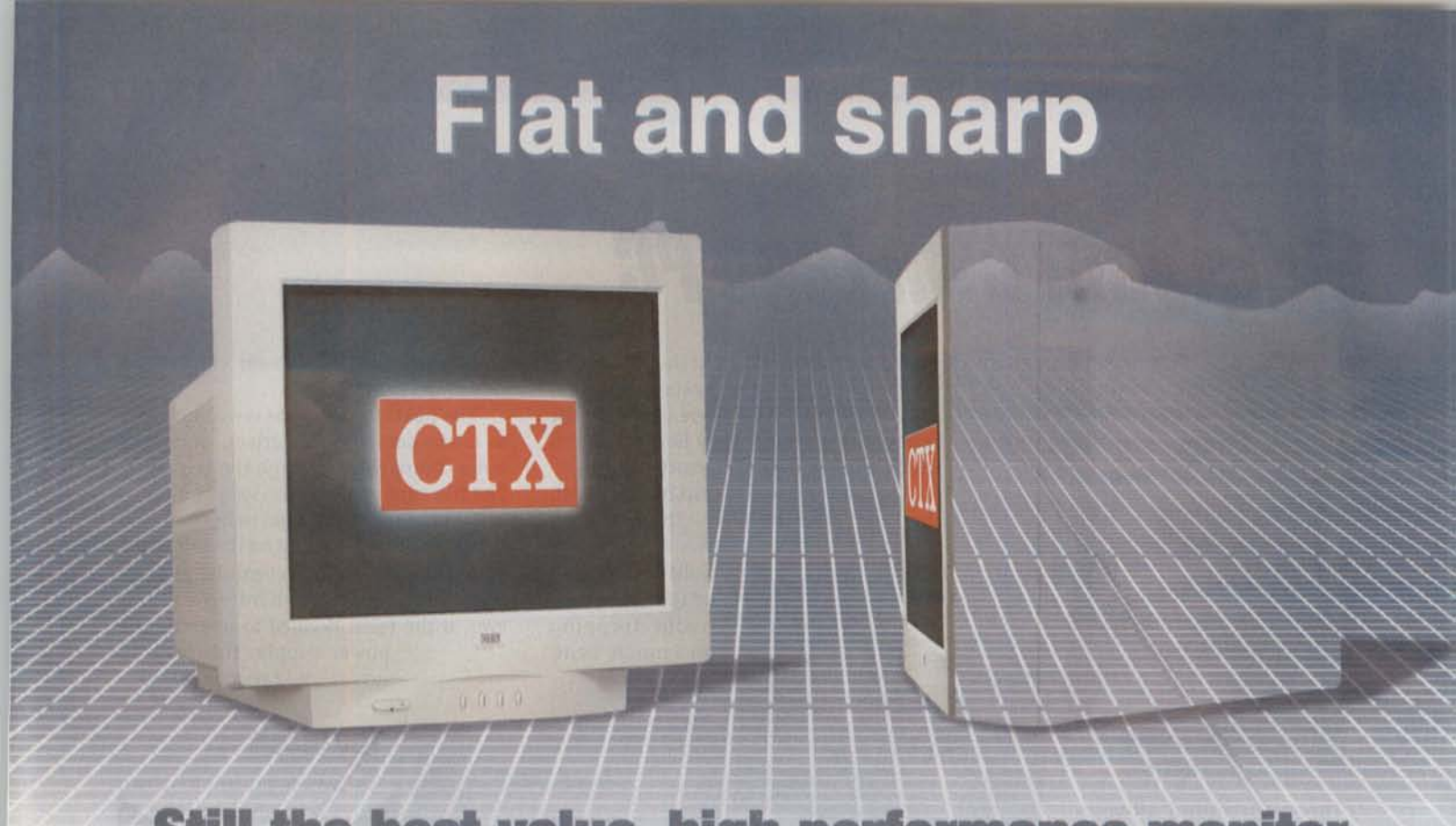
The project went very smoothly, but the three have some words of advice for anyone considering a similar project. "It's important to be careful with the heat and power supply — you don't want the whole thing melting. Double and triple check all your wiring so you don't short out any of the electrics, and don't use a brand new Pentium III or G4. If you make a mistake, you could burn out your hardware," Carlo said.

It's also a good idea to have basic tools like a multimeter and pliers ready. That way, you can test external lights and the power switch before turning them on.

William Maher



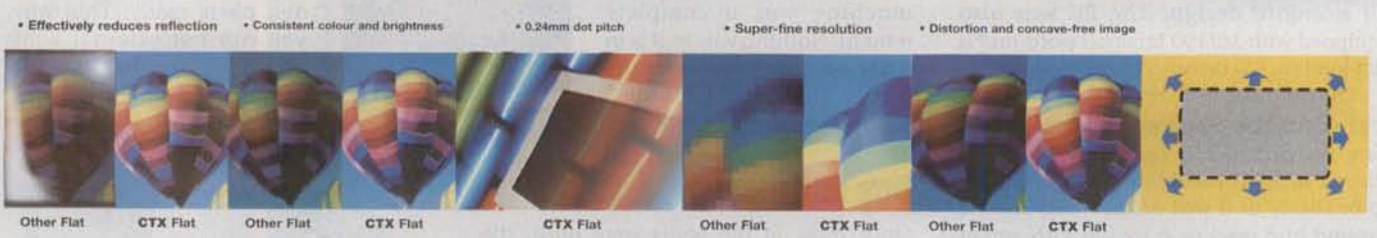
Flat and sharp



Still the best value, high performance monitor

- **Features 17inch super-flat FD Trinitron CRT**
- **Patented super-flat FD Trinitron CRT** produce saturated colours and crystalline images of the purest resolution. With uniform image size extended to every corner, the tubes are free from the distortion that characterised cylindrical and spherical screens.
- **Super-flat screen** minimises reflection and protects vision.
- **Built in USB HUB** expedites peripheral connections.
- **0.24mm super-fine pitch** ensures a super sharp image, provides excellent visual comfort and eliminates long-term viewing fatigue.
- **Extra-large viewable area** facilitates web surfing graphics
- **TCO99 compliant**, environmentally friendly design minimises radiation

Three Years Limited Nationwide Warranty



CTX PROFESSIONAL FLAT SERIES

NEWEST CTX MONITOR LINE

Exclusive distributor

Ocean Office Automation Pty. Ltd

www.ocean.aust.com

CTX and CTX Logo are registered trademarks of Chuntex Electronic Co. Ltd Trinitron® is registered trademark of Sony Corporation

Design Foundry - 444OceaAPC/Jan01/Mon

Built for quality, performance and reliability



Solutions to fit your needs. Solutions to grow with your business. Established in 1992, Ocean Office Automation, the manufacturer of Octek PCs, continues to excel in providing IT solutions to businesses of all sizes. From a basic desktop PC to a fully configured network solution tailored to your needs. Whatever the needs, whatever the business, Ocean delivers ...

Desktop PCs

From basic office terminal to full multimedia capability and graphics applications.

Workstations

For intensive number crunching, CAD/CAM, graphics intensive applications and even the games fanatic!

Servers

Validated Intel White Box servers. From entry level with single processor to enterprise with quad processors and full redundancy.

INTEL® WHITE BOX SERVER

(Fileserver)
Intel® Pentium® III Processor 850MHz

- *Intel® L440GX+ Server Board
 - Integrated Graphics
 - Integrated Intel PRO/100+ NIC
 - Intel® Server Control
 - Emergency Management Port
 - System Management Instrumentation
- *256MB SDRAM with ECC
- *2 x 9GB Ultra160 HDD (Hot-Swap)
- *Intel® SC5000 Server Chassis with 5 hot-swap bays
- *Sony 48x CD-ROM drive
- *Sony 1.44MB FDD
- *Microsoft Intellimouse
 CTX 15 Monitor 1280 x 1024

$4,890
or $44 per week

PROFESSIONAL WORKSTATION

Intel® Pentium® IV Processor 1.4GHz

- * Intel D850 Pentium IV mainboard
- * 128MB RDRAM 800Mhz
- * Sony 1.44MB FDD
- * Quantum Ultra ATA/100 60GB 7,200rpm HDD
- * Sony 48x CD-ROM drive
- * Aureal SuperQuad Digital Soundcard with A3D
- * nVidia GForce 32MB AGP Graphics w/TV Out
- * Medium Tower chassis
- * Microsoft Internet keyboard
- * Microsoft Intellimouse
- * CTX 17" Flat Screen FD Trinitron Monitor
- * Windows 2000 Professional

$4,390
or $40 per week

GAMES SYSTEM

Intel® Pentium® III Processor 1GHz

- *128MB SDRAM
- *Quantum 30GB IDE HDD
- *nVidia GForce 32MB AGP Graphics w/TV Out
- *Internal 56K Data/Fax/Modem
- *12x DVD-ROM with software
- *Aureal Vortex2 SuperQuad Digital Soundcard with A3D
- *Altec Lansing ACS54 Speakers (Sub-woofer + 4 satelliet speakers)
- *Medium Tower ATX Chassis
- *Microsoft Internet keyboard
- *Microsoft Intellimouse
- *Microsoft Worksuite
- *MS Windows 98 or Windows ME
- *CTX 19" Monitor

$3,490
or $31 per week

OFFICE TERMINAL

Intel® Pentium® III Processor 800MHz

- *64MB SDRAM
- *Quantum 10GB IDE HDD
- *Onboard Sound & Graphics + NIC
- *Sony 48x IDE CD-ROM
- *Slimline Small Footprint Desktop Case
- *Microsoft Internet Keyboard
- *Microsoft Intellimouse
- *Microsoft Worksuite
- *MS Windows 98 or Windows ME
- *CTX 15" Monitor 1280 x 1024

$1,990
or $18 per week

All prices quoted include GST

OCTEK
NEW TECHNOLOGY FOR THE NEW MILLENNIUM

For more information and custom-configurations, please call
1300 132 682
www.octek.com.au

Quality Endorsed Company
ISO 9002 Lic 6184
Standards Australia

intel inside pentium III

Design Foundry - 468OcePCW/Apr01/9ys

Improve the sound quality of your PC's speakers.

Speaking up

Most PC speakers are small, made of plastic, and sound lousy. However, they don't have to sound that bad, and it's surprisingly cheap to upgrade to a much better set.

The amount of bass you get out of a speaker is determined partly by its size and partly by its design. Cleverly vented boxes can produce louder results for a given amount of power, and provide better bass response as well.

The small plastic cabinets used for standard computer speakers often have vents, but usually their role is little more than cosmetic. The small drivers (the electricity-to-sound transducers) in these speakers have no real bass output to speak of. Even the best designed cabinet can't put out sound that the drivers haven't produced.

That said, you can get better sound out of even the cheapest speakers if you take care spacing them. Don't squish them hard up against your monitor, and turn them inwards so they point at your ears. Sit them on a shelf at about ear level, or put something under the front of the cabinets so that they're aimed at your head. By doing this you'll get better sound than you might expect from seriously underwhelming audio equipment.

Pump up the quality

Buying better speakers will greatly improve sound quality. Three-piece, or 'sub-sat', speaker systems have two small satellite speakers that are often very similar to ordinary, small, two-piece speakers, and one larger subwoofer with a single large driver in it.



The subwoofers in these systems aren't particularly powerful, but clever box design allows the delivery of quite an impressive amount of bass. You get quantity rather than quality, but it's adequate for games and MP3s, particularly considering how little you pay.

There are lots of made-in-Taiwan three-piece systems for well under $200; some of them cost less than $100. The quality of these systems varies, but if they work to start with, they'll usually keep working.

Some big-brand speakers can also be surprisingly inexpensive. You can buy Altec Lansing and Cambridge SoundWorks three-piece sets for well under $150, and you can pick up five-piece surround setups (with dual inputs for use with dual-output soundcards) for about $200.



▲ Creative Labs' Cambridge SoundWorks PCWorks three-piece system costs less than $120.

Three and five-piece system satellite speakers should be set up in the same way as ordinary two-piece speaker systems. Space them out a bit and aim them at your head. The subwoofers, on the other hand, need special treatment.

Sub standards

These subwoofers all use vented enclosures — often 'bandpass' dual-chamber arrangements — that usually have a vent on one side. Don't push the vent up close to or against a wall or the floor, otherwise the resonance effects that the enclosure uses to boost bass response will go wrong.

Bass frequencies are also affected by room resonances. The size of your room determines how low a frequency it can support, but unless your computer room is a cupboard under the stairs, it's big enough to support the low bass emitted by a small subwoofer. However, resonances are still important; a room's dimensions and contents set up all sorts of odd reflections and resonance. Quite small changes in the location and orientation of the subwoofer and your seating can make a big difference to how the bass sounds.

Try out different positions and orientations for the subwoofer. Don't assume that you'll get the best response by pointing the grille and/or vent at yourself. Positioning experiments can be handicapped by the short speaker cables common with many multi-piece systems. If the cable length is restrictive, get extensions.

The cables are almost always ordinary figure-eight speaker wire, which is available at any electronics shop. They generally terminate in bare wires, RCA connectors or 3mm plugs. In the case of bare wires, anyone with basic soldering skills can extend the cables a few metres. For the latter two cable endings, you can splice in more wire or use commercial male-to-female audio extension cables. These cables are only intended for line level audio, not speaker level. However, computer speaker satellites have very low current requirements, so this shouldn't cause any problems — you're not building a PA for Metallica here. In any case, RCA and 3mm connectors are also only meant to be used for line level.

If you have a system with bare wire terminals, don't worry about electrocuting yourself; the voltages involved are barely enough to tingle your tongue if you lick the terminals. The only mistake you can make with bare wire leads is wiring your satellite speakers 'out of phase' — wiring them backwards relative to each other or relative to the sub. This messes up your stereo imaging and/or bass response. Pay attention to the wiring information that comes with the speakers. Usually the wire with a stripe or some text on its insulation jacket is the negative one and should go to the black terminal.

Daniel Rutter

For a complete archive of *APC* Step by Step columns, see apcmag.com.

Daniel Rutter can be contacted at dan@dansdata.com.

MicroGram Computers

Affordable Web-Based Training

A whole range of courses available!
Including WIN 2000, Lotus Notes R5, Motivation, Home Business, Internet Information Server 4 and MCSE Series.
Full details at www.tol.com.au

TERMINALS

Text Terminals



Replace your aging terminals or install new systems using industry standard items. Our terminals emulate a wide range of industry terminals, including WY-120/60, 325, 50+; TV1910+ / 925, ADDS A2, PC TERM, PCG ALPHA, VT52, 100, 220; and Console ANSI. Standard VGA monitors and AT keyboards plug straight into the back of the terminals and they are available with either a serial connection or an ethernet connection.

Cat. 1133 Terminal Colour 460K Serial $500
Cat. 1134 Terminal TCP/IP Ethernet LAN $525

Windows Based Terminal



Save on your system & support costs and considerably enhance your security. On a Windows Based Terminal system, all the processing is done on the server, the terminal only receives screen updates. There are no floppy drives or PC operating systems to corrupt. Simply connect over your ethernet network, via modem or even over the internet. The terminals support Microsoft's RDP and Citrix ICA3 protocols, in addition to emulating a number of standard terminals (VT100 etc).

Cat. 1214 Terminal Windows Based $979

USB Video Capture Box

Easily capture a picture from your analogue video stream. Just plug the capture box into a USB port and load the included software.

Cat. 3393 Video Frame Capture - USB port $186

CardBus to Firewire Converter

Connect your digital Video camera, Firewire connected hard drive etc. to your Notebook via our PC CardBus adapter. ULead Video Studio V4.0 is bundled with the adapter.

Cat. 2821 Converter PCMCIA to Firewire $311

Need FAST access to an external Hard Drive?

Just fit a standard 3.5in IDE Hard Drive to this case and connect it to a FireWire port. Drive capacity may be up to 128Gb and it supports Hot Swapping and Plug-and-Play.

Cat. 6633 External case IDE via Firewire $369

Ultra DMA 100 IDE Controller

With its two enhanced Ultra DMA100 IDE ports it accommodates up to 4 IDE devices and co-resides with motherboard IDE ports to support 8 ATAPI/IDE devices simultaneously.

Cat. 2827 DMA 100 IDE Controller $119

Multi-PC Controllers

Save time, space and money by using one keyboard, monitor and mouse to control up to 16 PCs.


Cat. 11654


Cat. 11655

Our Multi-PC Controllers are available to control 2, 4, 8 or 16 PCs & operate in DOS, Win 3.x/9x/ME/NT/2000, Netware UNIX and Linux environments. PC selection is via a push button or keyboard hot keys.

Cat. 11654 2 way PS/2 - KVM Switch $199
Cat. 11655 4 way PS/2 - KVM Switch $389
Cat. 11656 8 way PS/2 - KVM Switch $949
Cat. 11657 16 way PS/2 - KVM Switch $1299

Hot-Swap IDE RAID Array

Avoid downtime delays when your hard drive fails! This unit enables you to replace the hard disk while the PC is operating and it automatically resynchronizes itself to full operation. The RAID unit fits into two continuous 5.25" bays and includes a controller and two removable frames. The array accepts two EIDE, Ultra DMA 66/33 or PIO 4 hard drives. The controller provides RAID Level 1 disk mirroring. It can also be used as an on-line hard drive copier.

Cat. 2808 IDE RAID Array $1199

Share 3 USB Devices with up to 4 PCs

Share up to three or six USB devices between two or four computers. Easily share USB printers, IRDA adapters, Zip drives, scanners etc on a first come first served basis.

Cat. 12051 2 PCs to 3 USB Devices $139
Cat. 12052 4 PCs to 3 USB Devices $169

Compact Keyboard



When desk space is at a premium an 80 key keyboard with full 101 key functionality will come in handy. It has dimensions of only 297(W) x 152(L) x 30(D) mm.

Cat. 8403 80 key Keyboard $75

Portable Laser Data Collector



Count your stock, collect remote data etc. with this portable hand held laser barcode scanner. Easily programmed with a built-in program generator or the Windows based task generator. An LCD display provides the user interface along with a 26 key keypad. Uploading is via RS232 and an infrared link built into the cradle. Battery memory effects and other problems are largely overcome with the Lithium Ion battery which is automatically charged when placed in the cradle.

Cat. 8946 Portable Laser Data Collector $2149

Connect a Digital Video Camera to your PC



Our FireWire Interface Card and Editing Software allows most digital camcorders available today to connect to your PC at speeds up to 400Mbps. The card has three external & one internal connector to allow connection to hard drives, scanners, VCRs, HDTV, printers etc. Editing videos is simple with the bundled Ulead Video Studio V4.0 SE software (or Upgrade to MEDIASTUDIO PRO V6.0 Cat. 70406).

Cat. 2621 Interface card & s/ware $196
Cat. 2823 USB Combo card $329
Cat. 70406 Software upgrade $145

6 Port Firewire Hub

When you have several FireWire devices in a daisy chain configuration, disconnecting one in the early sequence of the chain, interrupts the rest of them. But with our 6 port FireWire Hub, you eliminate the daisy chain effect and allow uninterruptible "hot plugging" of all your FireWire devices.

Cat. 2847 Firewire Hub 6 Port $179

The Missing Link



The Microgram 11808 audio-video RF link with infra red repeater allows you to send high quality colour video and stereo audio from one room to another and control the source with your existing remote *without wires!* Signal penetrates walls, doors, ceilings & floors with an A/V signal range of 100M. Three separate channels allows up to 3 transmitter/receiver pairs to operate simultaneously. Comes complete with 2.4GHz transmitter & receiver.

Cat. 11808 AV RF Link $236
Cat. 11809 Additional receiver $139

We welcome Bankcard, Mastercard and VISA
NO SURCHARGE!

Website, online catalogue & shop: www.mgram.com.au

Phone: (02) 4389 8444
sales@mgram.com.au
info@mgram.com.au
Fax: (02) 4389 8388
FreeFax: 1 800 625 777

Australia wide express courier $12 (3kg max)

MicroGram Computers

Dealer Enquiries Welcome!

Unit 1, 14 Bon Mace Close,
Berkeley Vale NSW 2261

Vamtest Pty Ltd trading as
MicroGram Computers ABN 60 003 062 100.

All prices subject to change without notice. MGRM0401

Get your games working under Windows 2000; and make Active Desktop useful again.

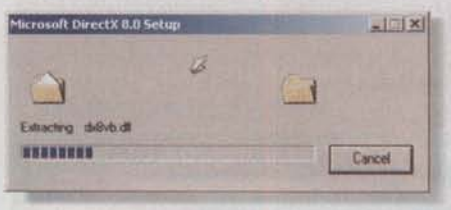
Lift your game

Windows 2000 as a gaming platform

The prevailing view is that you should use Windows 98 or Windows Me if you want to play games. However, Windows 2000 can also be quite a good gaming platform, if you can get the game working.

There are many reasons why Windows 2000 provides an excellent platform for playing games. While Windows 98 and Windows Me still rely on 16-bit code, Windows 2000 is completely 32 bit. This means that it's a faster and more stable system; in many operations, it's is up to 20% faster. Windows 2000's superior stability means that a game bug won't crash the entire system, as it sometimes does under Windows 98. Plug and play support is also better in Windows 2000, and you don't have to reboot after installing drivers for a new joystick or video card.

There are also numerous disadvantages to using Windows 2000 for playing games. Many games are not designed to install on an NT system, and as Windows 2000 is recognised by many installation programs as Windows NT 5, you may have some installation problems (ntcompatible.com includes a game tuning guide for Windows NT and 2000). Windows 2000 is also a more complicated operating system than Windows 98, so things that are easy to fix in Windows 98 may be more difficult in 2000. As Windows 2000 is still relatively new, important hardware drivers may still have bugs. There can also be serious problems if you run low on RAM in Windows 2000, but



▲ Install the latest version of DirectX to improve your gaming experience.

you can avoid these by setting up Virtual Memory with an adequate swapfile.

DirectX

One of the main reasons to consider Windows 2000 for games is that, unlike its NT predecessors, Windows 2000 works with DirectX technologies. DirectX is a suite of application programming interfaces from Microsoft designed to make life easier for game developers and the gaming experience better for players. It has been one of the key factors in the push to make Windows a more appealing multimedia platform to game developers than DOS.

The DirectX multimedia technology allows developers to write games without worrying about which display adaptor, soundcard or 3D accelerator card is installed in your PC. For games, the most important components of DirectX are DirectDraw, Direct3D, DirectSound and DirectInput. DirectDraw assists with standard 2D graphics, while Direct3D provides advanced 3D graphics features. DirectInput handles the input information produced by game controllers and DirectSound provides the link between the game and your soundcard.

Windows NT 4 does not fully support DirectX because it was primarily designed as a business operating system. However, Windows 2000 officially supports DirectX 7.0a. DirectX 8, which is the latest release, can be installed using Windows Update.

Getting that game to work

As mentioned earlier, some games are not configured to install on Windows NT. If you have a dual boot system with Windows 2000 and Windows 98 or Windows Me, there are a couple of things you can try to make your game work under Windows 2000. First, after installing the game in Windows 98/Me, reboot into Windows 2000. Windows 2000 may automatically re-create the same registry settings, meaning the game should work. If it doesn't, reboot back into Windows 98/Me.

Once back in Windows 98/Me, open the Registry Editor by selecting Run from the Start Menu, and type regedit. Use regedit to search for the name of the game you installed, along with the name of the companies that produced and published it. Export any keys that you find to a registry file. Next, boot into Windows 2000 and merge those registry files into the Windows 2000 registry. If your game still won't work, try installing the game using the Application Compatibility tool.



▲ When nothing else works, use the Application Compatibility tool.

The Application Compatibility tool works by convincing programs that they are running under an earlier operating system. Use this program when installing your game and also when trying to run it. The software can be run from the Windows 2000 CD or you can install it along with a number of other support tools onto your system. The APCOMPAT.EXE file is in the Support folder on the CD, and you can install all the Windows 2000 support tools by running the SETUP.EXE file in the Tools subfolder. You can also download the Application Compatibility Toolkit from msdn.microsoft.com/compatibility.

However, there is a downside to using the Application Compatibility tool. When running the actual game, extra resources are needed, and this might have a negative effect on game performance. If you are worried about how your system will cope with new games, try installing the Windows 2000 Service Pack 1. The pack contains a number of fixes that can improve overall system performance and reliability. It also makes DirectX faster and more reliable, but this won't matter if you install the newer DirectX 8. You can download the Service Pack (around 14M) from www.microsoft.com/windows2000/downloads/recommended/SP1.

Along with Service Pack 1, Microsoft is continually working on specific compatibility updates that correct problems relating to specific applications. Initially, compatibility testing for business software was given top priority, but that phase has now passed and Microsoft is focusing more on games and entertainment titles. Win-

dows 2000 compatibility updates are released regularly and can be downloaded from www.microsoft.com/windows2000/downloads/deployment /appcompat. If you have problems with a particular game, visit the Web site for a list detailing which games have been tested and fixed. The most recent update package for each game includes all previous fixes.

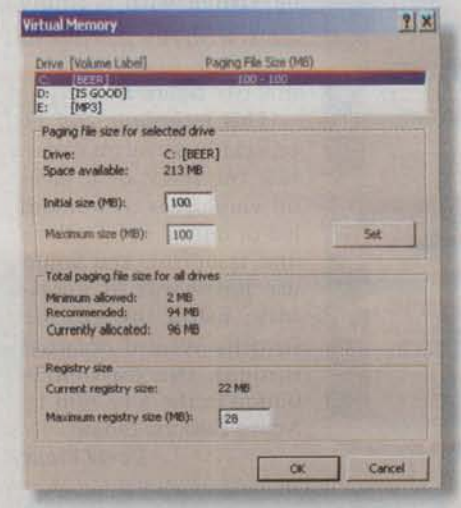
Most gamers know that having the most up-to-date driver is crucial for games. This is especially important for your video card. Having the right driver is even more important in Windows 2000; don't settle for the generic drivers that Windows 2000 assigns to your video card. These drivers may work well enough, but drivers supplied by the hardware manufacturer usually perform better.

Optimising virtual memory

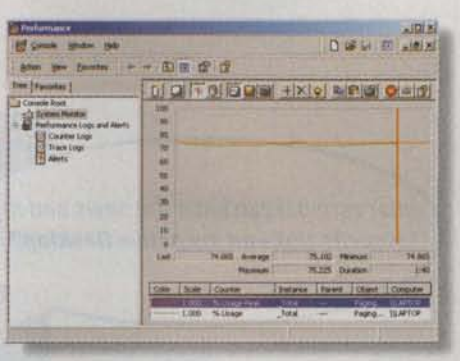
Once you have your games running under Windows 2000, performance can be improved. One way to do this is to alter how Windows 2000 manages virtual memory. It's important to ensure that your virtual memory is set at optimal levels when playing games in all versions of Windows. Memory management in Windows 2000 is a lot better than in Windows 98, but there are still benefits in specifying exactly how memory should be handled.

Your system's virtual memory is made up of RAM and a swapfile, also known as a paging file. The swapfile is stored on the hard disk and is used to hold data that does not fit into RAM.

So, how do you go about optimising your swapfile? First, work out how large the swapfile should be. When Windows 2000 is installed, the initial size of your swapfile is set to one-and-a-half times



▲ Take control of virtual memory by manually setting its size.



▲ Monitor your swapfile usage with the System Monitor.

the size of your RAM. This is not always adequate, as systems with smaller amounts of RAM need a larger file than those with plenty of RAM.

You can analyse your swapfile usage using the System Monitor. This is accessed from Administrative Tools in the Control Panel. The System Monitor includes a standard graphical monitor or Counter Logs. After selecting Add Counter, select Paging File from the Performance object menu. Then use the '% Usage Peak' counter with the _Total instance.

After putting your system through a game-playing workout, use the System Monitor to see how much of your current swapfile is being used. If you find that a high percentage of your swapfile is being used (80% or more), then increase its size. If a small percentage is being used, you can safely reduce the size. Once you determine what size your swapfile should be, or at least whether it should be bigger or smaller, go back to the Virtual Memory window and change the Initial and Maximum sizes.

There are two ways to specify the size for the swapfile in Windows 2000. You can create a permanent, fixed swapfile, or a semipermanent one. For a permanent swapfile size, add about another 30M to your value to allow for unforeseen circumstances, and enter the same value for both Initial and Maximum sizes. For a semipermanent swapfile, enter the Initial value and then double that value for the Maximum size. The benefit of a semipermanent swapfile is that the size can be increased by Windows if necessary.

Another tip to improve swapfile performance is to place the file on the most used partition of the least used drive. If you only have one hard drive, leave the file on the partition where Windows 2000 is installed. Putting it on another partition on the same drive will have a negative effect on performance. The location of the swapfile can be set at the top of the Virtual Memory window.

Windows shareware

Bubble Bobble Nostalgie

Relive the past with this absorbing arcade game involving a cute little dragon and bad guys in bubbles.

Macromedia Fireworks 4.0

Use this image editing and drawing program to create brilliant Web graphics, including animated GIFs.



NeoTrace Pro 3.01

With this utility you can trace the exact path taken when connecting with another server.

Anonymity 4 Proxy 2.52

This application stops Web sites from seeing your IP address by directing all incoming Web pages through a public anonymous proxy server.

NetCaptor 6.2.1

This Web browser allows you to view several Web sites with only one tab on the Windows taskbar, and has other useful features.

These programs and others can be found on this month's cover CD, along with more detailed reviews.

Finally, if your system is still lagging after you've optimised your swapfile, you may have to buy some additional RAM. The minimum standard is currently 128M. Additional RAM should always help to improve the performance of your PC.

Kieran McNamee

Keiran McNamee can be contacted at kmcnamee@acptech.net.

Windows 98

Active Desktop was a key element in Microsoft's marketing push for Windows 98. However, it soon fell by the wayside as bandwidth-conscious corporate IT managers and users got fed up with content channels that ate up resources. Some channels are still available, but their relative obscurity has removed much of the incentive to use Active Desktop.

However, the feature is worth investigating as it has other uses. If you're a news junkie or like to visit sites that are updated regularly, you can use Active Desktop to set up a news ticker.

To do this, visit a site and right-click on the Internet Explorer icon on the left side of the URL bar. Drag the icon onto your desktop and then select the Create Active Desktop item(s) Here option. Choose Yes to confirm and OK in the Add Item To Active Desktop dialog box.

Windows then downloads the content of the Web site and places it in a window (see figure 1). This window can be dragged around the desktop and resized by clicking and dragging the lower-right corner. You can also add Active Desktop items by clicking on the desktop and choosing Active Desktop, New Desktop Item. You can delete or deactivate items using Active Desktop, Customize My Desktop.

Menubars and advertisements in these windows can quickly devour valuable screen space, particularly on low-resolution desktops. Depending on the site you want to add, you may be able to trim down the window's size by removing these frills. On sites with frames, this is relatively easy.



Open the site, then click View, Source to open a view of the frames' HTML source code. Next, find the HTML code that loads the content window. This is contained in a <frame> line of code, within the <frameset> definitions right after the <head> section. For example, <frame name="main" src="/home/0,4781,News,00.html" border="0" . . . >.

Copy the contents of the src=". . ." section, then paste it into your Internet Explorer URL bar. If the page you want is a relative Web address (one that doesn't include an explicit http://), type this into the URL bar before the directories. In this case, the complete URL is www.news.com.au/home/0,4781,News,00.html. Add this to Active Desktop as described above, and the space-consuming title bar will no longer hog your desktop.

Another practical use for the Active Desktop is to create your own portal — one that keeps your most useful links only a click away at all times. To do this, use your favourite HTML editor to create a basic text page with a list of links. These can be organised into smaller sections or tables if you like. Feel free to add graphics, but download considerations mean it's best to use locally stored images unless you have a broadband connection.

Once you've created your HTML file, locate it by opening the folder it's stored in. Right-click and drag it onto your desktop. The result is an onscreen list of your favourite sites that stays on your desktop and can be visited with a single click without having to open Internet Explorer first (see figure 2).

This technique can be especially useful on corporate intranets, as it gives all employees a standard list of online applications and resources. You could use passwords, if necessary, using the Offline Favorite Wizard accessed through the Customize button in the Add Item To Active Desktop dialog.

David Braue



▲ Figure 1: Drag files or Web pages onto the Active Desktop to keep them constantly available.



▲ Figure 2: A customised favourites window gives you access to your most useful sites.

For a complete archive of *APC* Windows columns, see apcmag.com.

David Braue can be contacted at David@Braue.com.

PIONEER
COMPUTERS AUST. & NZ



Pioneer Thinbook
PIII 700 $3990

Intel® Pentium® III Processor 700MHz
128Mb SDRAM
12Gb Ultra DMA HD(20Gb +$160)
24 X CD ROM (8X DVD +$470)
12.1" TFT LCD 1024X768
100/10M Lan+56K Modem+USB
1394 Firewire, Only 1.5Kg
3D Audio Stereo System
MS Windows ME

Pioneer Powerbook
PIII 1GHz $3990

Intel® Pentium® III Processor 1GHhz
128Mb SDRAM
12Gb Ultra DMA HD(20Gb +$160)
8X DVD ROM
14.1" TFT LCD 1024X768
100/10M Lan+56k Modem+USB
1394 Firewire, All in one
3D Audio & Microphone
MS Windows 98 CD





Pioneer SOHO PC
PIII 866 $1,830

Intel® Pentium® III Processor 866 MHz
Gigabyte Pentium III Motherboard
128Mb PC133 SDRAM
IBM 20Gb HDD 7200 RPM IDE
Nvidia TNT2 32M AGP
Creative Vibra 128 sound card
Macase ATX GLOSSY Midi Tower
Altec Lansing ACS22 Speaker
MITSUBISHI 50X CDROM, 1.44Mb FDD
SAMTRON 15" Monitor
MITSUBISHI K/B, Mouse, Win 98

Pioneer GAME PC
PIII 933 $2,690

$300 Games for free:
MDK2,DeusEX,The Matal Age
Intel® Pentium® III Processor 933 MHz
Gigabyte Pentium III Motherboard
128Mb PC133 SDRAM
IBM 30Gb HDD 7200 RPM IDE
Creative GeFORCEPro 32M AGP
Creative Live Digital Entertaiment 5.1
Macase ATX GLOSSY Midi Tower
Creative SubWoofer Speaker
12X DVD ROM, 1.44M FDD
HITACHI 17" CM615 Monitor
MITSUBISHI K/B, Mouse, Win 98





Pioneer POWER PC
PIII 1GHz $2,890

Intel® Pentium® III Processor 1GHz
Supermicro/Gigabyte 815 PIII M/B
128Mb PC133 SDRAM
IBM 45Gb HDD IDE 7200 RPM
Creative GeFORCE 2 32M GTS AGP
Creative SB LIVE digital card
Macase ATX GLOSSY Midi Tower
Creative SubWoofer Speaker
16X DVD IDE DRIVE, 1.44Mb FDD
HITACHI CM615 17" Monitor
Microsoft K/B,Intelli Mouse, Win 98

Pioneer POWER PC
P4 1.3GHz $3,590

Intel® Pentium® 4 Processor 1.3GHz
Supermicro/Gigabyte 850 P4 M/B
128Mb PC800 RDRAM
IBM 45Gb HDD IDE 7200 RPM
Creative GeFORCE 2 32M GTS AGP
Creative SB LIVE digital card
Macase ATX GLOSSY Midi Tower
Creative SubWoofer Speaker
16X DVD IDE DRIVE, 1.44Mb FDD
HITACHI CM715 19" Monitor
Microsoft K/B,Intelli Mouse, Win 98



Pioneer Computers Australia.

PioneerComputers.com.au

Unit 2, 37 O'Riordan Street Alexandria NSW 2015
Phone: **(02) 9690 2888** *Fax:* **(02) 9690 0333**
sales@pioneercomputers.com.au

Pioneer Computers New Zealand
Phone: **649 534 3869** *Fax:* **649 534 3239**
www.PIONEERcomputers.co.nz

- Commonwealth Government Endorsed Supplier
- ISO9002 Quality Endorsed Company QEC 11489
- ITS 2000 (PC)
- ITS 2006 (Peripherals)
- ITS 839A (Portable Computers)
- ITS 2308 (Printer)
- QLD Government GITC Q-1263
- MAPS Group contractor 0203/0701 - IT Services
- PC World - Best Buys
- Australian Personal Computer - Editors Choice
- PC Mag - Editors Choice
- PC Authority - 'Speed' Award

intel inside pentium III

intel inside pentium 4

Intel, the Intel Inside Logo and Pentium are registered trademarks of Intel Corporation.

ALL PRICE INC. GST Warranty: Notebook: 1 Year Parts, 3-Year Labour, PC:2-Year Parts, 5-Year Labour

Update files quickly and easily using the patch command.

Patch this

Last month, we looked at the diff utility, which inspects two similar text files and reports any differences between them (*APC* March, page 126). You could use diff, for instance, to look for changes in a file sent back to you after editing. To find out exactly what editing was done, use a command like the one below.

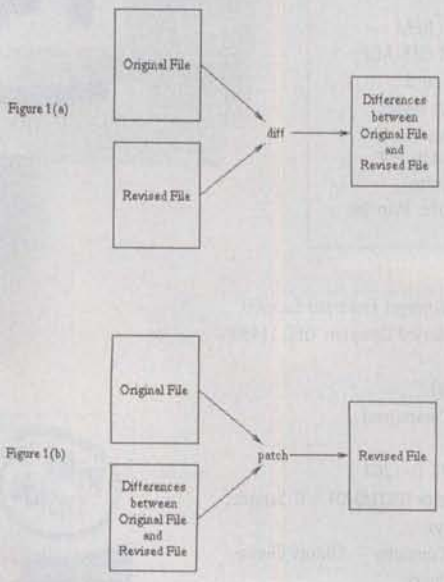
```
diff -u myoriginalfile mymodifiedfile
```

The 'patch' file can be used to update the original document with those changes. For instance, instead of receiving an edited document, you might be sent just the changes — the output of diff. Rather than manually altering the original document, the changes can be made automatically using the patch command.

There are two main reasons for receiving diff output rather than an entire revised file. First, it means you don't have to run diff yourself to find out what changes have been made. Also, less data is usually sent this way, as the changes are generally small relative to the size of the document.

Once you have received and read the output of the diff command, add the changes to the original document. One way of doing this is to fire up your favourite text editor and make the changes yourself. A quicker and more reliable way is to use the patch utility.

Figures 1(a) and 1(b) illustrate the relationships between the files which diff and patch read and write.



▲ Figures 1(a) and 1(b)

The differences between files detected by diff are commonly called patches (or software patches when referring to software source code).

Patching a single file

To experiment with patch, create a text file called myfile, make a backup (myfile.bak), and then modify myfile in some way.

```
vi myfile
cp myfile myfile.bak
vi myfile
```

The next step is to create a patch using the diff command and place it into a file, which we'll call mypatch.

```
diff -u myfile.bak myfile > mypatch
```

The order of the two files, myfile.bak and myfile, is important. If you get it around the wrong way, the patch is reversed and undoes the changes. The patch command can automatically detect and deal with reversed patches, but it's better to get it right the first time.

Once you've created mypatch, make sure that it does describe the differences between myfile.bak and myfile. Next, remove the newer file, rename the older file myfile, and you are ready to try out the patch command.

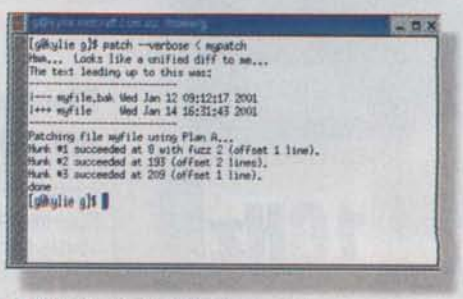
```
rm myfile
mv myfile.bak myfile
patch < mypatch
```

Note that we redirect in the mypatch file rather than specifying it as an argument. Also, we didn't need to specify the name of the file that is to be patched, because the patch file includes these details. If you want to explicitly specify the file to be patched, specify it on the command line.

```
patch myfile < mypatch
```

Patching modified files

Sometimes the patch command may have trouble determining where the changes need to be applied. For example, if you send away a document for editing and modify the original in the meantime, then the patch you receive later might not work correctly on your revised original document. In most cases, patch figures out what to do and the changes merge nicely, but if both people modify the same part of the file, then the patch command can't tell which changes to apply.



▲ Figure 2: An example run of patch

If there's a failure, patch creates a file called myfile.rej containing the parts of the patch that were rejected. It's then up to you to read through this reject file and decide what should be done. It's also possible that your changes don't actually conflict, but if they are close together then patch might report that a 'hunk succeeded with fuzz'. This means that patch can tell that the original file has changed, but has managed to make the new changes anyway. If the line numbers in the patch are incorrect because you deleted or added lines in the original version, patch looks forward and backward through the file to try and find the correct location for the patch. Figure 2 shows an example run of patch, using the --verbose flag so that it prints a little more information.

Patch can deal with files in the 'normal', 'context', and 'unified' diff formats that were described last month. If you're creating diff output to be used with the patch command (rather than by a human), it's better not to use the normal format as it does not provide any context for changes and won't be any help if there are problems finding where changes should be made.

The patch command tries to apply changes as accurately as it can, and whenever there's a problem, it tells you. Patch also ignores any extraneous text above or below the patch. If you received a patch in an email, you can feed it straight through, without trimming any headers or footers.

Patching whole directories

As mentioned last month, diff can be used to compare whole directories or directory trees. Using patch in these circumstances might require an additional parameter so that it can find the files to patch.

If all the files to be patched are in the same directory (for example, if diff wasn't run with the -r (recursive) switch), you can run patch from within that directory and it will find all the files to patch. However, the person who created the patch might have stored their files in a different directory to you. If that person ran diff with the -r switch, then you need to give the program a little extra information.

Take a look in the patch file to see what directory names are used and compare them with the directories that your files are stored in. If the directory names are correct, tell patch to use them as is with the -p0 switch.

```
patch -p0 < mypatch
```

If the directory names are not the same, tell patch to remove the first directory component with the -p1 switch. To remove the first *and* second components, use the -p2 switch, and so on. For example, if the patch file says to modify the files 'testing/foo' and 'testing/bar', but your files are called 'mytest/foo' and 'mytest/bar', type the following.

```
cd mytest
patch -p1 < mypatch
```

The -p1 switch tells patch to ignore the first component (testing), so it will expect the foo and bar directories to be contained within your current directory, which you changed to the mytest directory.

Using patch to upgrade Linux kernel versions

For another example of how to use the -p switch, look at the Linux kernel source code, available from ftp://mirror.aarnet.edu.au/pub/linux/kernel/v2.2/. You'll find an archive of every 2.2.x Linux kernel. Each of these files is over 10M, and each new version of the Linux kernel is bound to have some similarities with the previous version, so these are good candidates for using diff and patch. The FTP site has a patch for each new version. Most are under 1M, and some are even under 100K.

If you have downloaded the source for Linux kernel version 2.2.11, you could update it to version 2.2.12 by downloading the patch that updates version 2.2.11 to 2.2.12 (420K) and applying it with the patch command. The end result would be the same as downloading the entire 2.2.12 source (12M).

In the first few lines of any Linux kernel patch, the filenames always begin with 'linux/. . .'. This means that if your 2.2.11 Linux source code was stored in a directory called /usr/src/linux, and the 2.2.12 patch was stored in /usr/src/patch-2.2.12, then you would apply the patch with the following commands.

```
cd /usr/src
patch -p0 < patch-2.2.12
```

In the above example, -p0 says to use the filenames as is. If the first file in the patch was called linux/CREDITS, then patch would modify the file /usr/src/linux/CREDITS, since our current directory is /usr/src. A different way to do the same thing follows.

```
cd /usr/src/linux
patch -p1 < ../patch-2.2.12
```

Here, -p1 tells patch to remove the first component (linux) from the filename; so linux/CREDITS becomes just CREDITS. Taken together with the current directory (/usr/src/linux), it becomes /usr/src/linux/CREDITS.

If your Linux kernel source code was stored in the directory /usr/src/linux-2.2.11 instead of /usr/src/linux, then you could use the patch -p1 command as in the last example (after changing to the /usr/src/linux-2.2.11 directory). However, you wouldn't be able to use the patch -p0 command, because it would be looking for a nonexistent /usr/src/linux directory.

Linux freeware

Compupic 5.1

Use this multipurpose file management tool to store and manage images, view slideshows, create thumbnails and do basic image editing.

Gimp 1.2

This new release of the popular open source image editing program has an improved interface, new filters and new scripting options.



Guarddog 0.95

Protect your files with this KDE2-based firewall configuration tool featuring an easy-to-use GUI.

Linux kernel 2.4

This new Linux kernel has improved USB and DVD support, new support for FireWire and PCMCIA, greatly improved SMP, and multithreaded TCP/IP.

Open Media System 0.1.7

This is an early test version of this open source Linux DVD and VCD player.

These programs and more can be found on this month's cover CD, along with more detailed reviews.

Further reading

For more information about the patch command, type info diff for documentation and related commands. The man page for patch (type man patch) is also a good reference.

Geoffrey Bennett

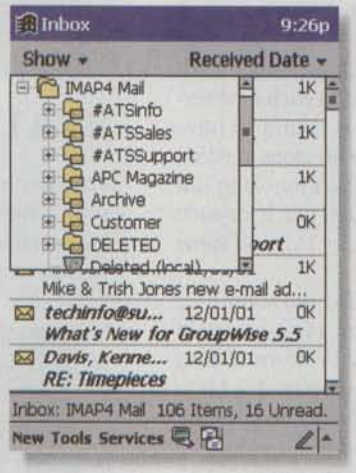
Geoffrey Bennett can be contacted at geoffrey@netcraft.com.au.

For a complete archive of *APC* Linux columns, see apcmag.com.

Discover how to read and write emails with your Pocket PC.

Mobile mail

Using a handheld PC doesn't mean you have to miss out on email. Your Pocket PC can synchronise email inboxes with your desktop PC and send and receive email from several POP3 and IMAP4 Internet mail accounts. This month, learn how to configure email on your Pocket PC, and how to get the most out of it.



▲ IMAP4 allows you to access folders in your desktop PC mail program.

First, you need to evaluate what your email needs are. If you want to access your messages anytime, anywhere, you need a modem and Internet or corporate mail account. If you only want to be able to read and respond to mail that's been sent to your desktop PC and don't mind working offline, you can just use Activesync to keep your PDA synchronised with your PC's inbox. You can also mix and match depending on your needs.

Storage space is an important consideration for either method. Your Pocket PC's 32M might have seemed like plenty of memory when you got it, but it's easily used up by applications. Purchasing a CompactFlash card to store your programs and email on may help with this problem. If you're using a CompactFlash modem, you might not be able to store your messages and attachments on your CompactFlash memory card as you won't have access to it when the modem is inserted. The only solution is a device with an extra card slot.

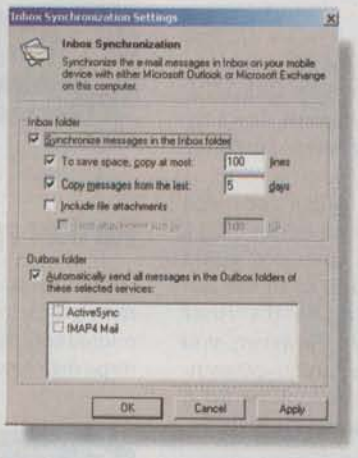
To minimise the amount of internal memory you use, it's advisable to put all your add-on programs onto an extra CompactFlash memory card. You probably won't need this data when you are connected to the Internet through your modem, and it will save internal memory space for mail messages and attachments.

To move your programs to an external memory card, go to your desk-top PC, left-click on the Tools menu in Activesync, and select Add/Remove Programs. Next, remove the tick mark next to the programs that you want to move. This will remove them from your PDA's internal memory. When the programs have been removed, pull your PDA from its cradle and put it back in. Repeat these steps, but this time remove the tick in the box for placing new programs into the default installation folder. Now, reselect the programs you want to install on your memory card. When each program reinstalls, you are asked where to install it. Use the pull-down menu to install them on your external memory card.

If you don't plan to connect to the Internet with your Pocket PC, you need to synchronise the Microsoft Outlook inbox on your desktop computer with your PDA. On your desktop PC, press the Options button in the Activesync program and tick the box next to the Inbox item. Next, select the Settings button and make sure your inbox preferences are set to meet your requirements. The next time you perform an Activesync your email should transfer to your PDA.

Full speed ahead

Modem users must keep connection speed in mind. If you are using a modem and mobile phone connected to your Pocket PC, the connection speed is likely to be very slow. Don't panic — there are a number of things you can do to conserve bandwidth.



▲ Define the number of lines and messages, and whether to get attachments.

In the Inbox Synchronisation and Internet mail setup, you can limit the number of lines pulled down in each message and how many days worth of messages to download. You can also specify whether you want to receive attachments and what size they can be. This is an important and difficult balancing act. Everyone wants to be able to read

PDA shareware

Metalion

Metalion is one of the best 3D shoot-'em-up action games for the Pocket PC, with great sound and graphics.

TealMaster

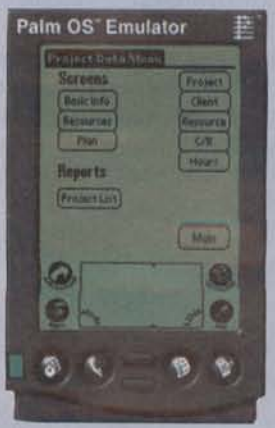
Manage your system hacks with this comprehensive Palm tool.

TealDoc

This document reader allows you to read not only standard Palm documents, but also enhanced TealDoc files that include graphics and links.

PalmProject

This handy application helps you to keep track of vital project information on your Palm, such as tasks, resources and timelines.



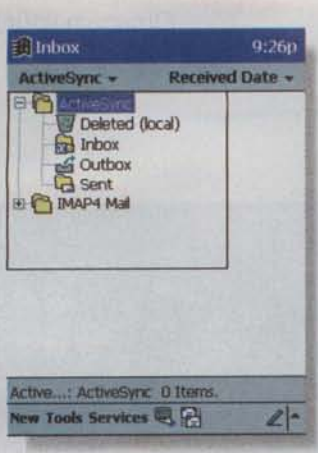
JWIN for EPOC

This package provides handy conversion, information and management tools for your Psion.

All these packages and more can be found on this month's cover CD, along with more detailed reviews.

important messages, but you don't want junk mail using up your limited memory space and taking a long time to download. By limiting what you pull down from the email server you can save a lot of connection time. Messages that aren't downloaded immediately can always be read later.

This is where IMAP4 mail is handy. IMAP4 is an Internet standard protocol that most ISPs choose not to use because it stores your messages on the mail server, taking up valuable disk space. It allows you to look at email headers only, then download the messages you want to read. IMAP4 also allows you to group your mail in folders.



▲ To switch between email folders, tap on the Inbox pull-down menu and select the appropriate folder.

If you connect to a corporate mail system such as Microsoft Exchange, Novell GroupWise or Lotus Notes and your system administrator has activated IMAP4 mail, you have much more flexibility than if you use a POP3 connection. You can view all headers on the server and download any messages you need. IMAP4 also allows you to access folders in your desktop PC mail program. However, IMAP4 isn't offered by every ISP and needs to be configured on a corporate email server.

Set up an account

Setting up a POP3 or IMAP4 Internet mail account for your PDA is similar to doing so for your desktop PC. First, go to the Start menu, select Programs, and open the Inbox program. To create a new account, tap on the Services menu and select New Service. Select IMAP4 Mail or POP3 Mail as the service type and give your service a user-friendly name.

Now, press the Next button and select your preferred dialup connection (see *APC* March, page 130). You need to enter the name of your POP3 or IMAP4 mail server and your userid and password. If you tick the box to save your password, a message is generated indicating that anyone who uses your device will have access to your data. If the security of your email is important to you, don't tick this box.

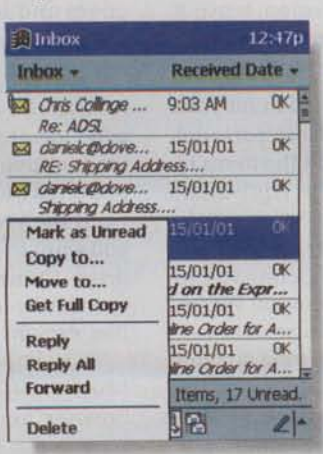
Tap on the Next button. If you're connecting to an NT RAS server, enter your domain name. POP3 and IMAP4 still require an SMTP server for sending mail, so make sure you enter this information along with a return mail address. To prevent spamming, most ISPs only allow you to use the SMTP server to send mail if you dial directly into the service. If you switch between ISPs and office accounts, you might need to change this setting manually to send mail from your PDA.

Tap on the Next button to choose whether you want to disconnect after using your mail, set the frequency of automatic mail checking, use MIME mail, or retrieve mail received within a set number of days. After these choices are made, press the Next button to choose whether you want to pull down whole messages, headers only, meeting requests or attachments.

It's best to be cautious when downloading attachments. Depending on the size of the file, attachments can cause major bottlenecks in your Internet connection. Find out the type and size of the file before you begin downloading. Your Pocket PC can read Word, Excel and many graphic files, but others such as PDF files are unreadable unless you install an add-on reader such as Primer (www.ansyr.com).

Select Finish to complete your service setup. If you use an external modem or mobile phone, you might want to store your attachments on a CompactFlash memory card. It shouldn't be necessary to change any of the other settings, but you can use the Message tab to finetune some of the settings. When you have finished, tap on the OK button in the upper-right corner to return to the main inbox program.

If you have more than one email account, you can set up each of them by repeating the steps above. Each account is given its own inbox, outbox, sent and deleted folders. To switch between these services, including the mail pulled down from your desktop PC by Activesync, tap on the Inbox pull-down menu in the upper-left corner and select the appropriate folder.



▲ Once you've found a message you want to read, hold your stylus on the message.



▲ Tap on the word 'To:' to pop up a list of contacts.

Check, create and send

To check your mail, first make sure that your modem or mobile phone is set up (see *APC* March, page 130). Tap on the email icon in the bottom-right corner of the screen and select the Connect button to establish an Internet connection. Once connected, new mail is downloaded and any messages you've written offline are sent. Once you've browsed the message headers and found a message you want to read or reply to, hold your stylus on the message. A menu appears giving you three options: read, reply or forward the message.

You can create a new mail message online or offline. Tap on the New button in the lower-left corner of the screen. To send a message to someone in your contact list, tap on the word 'To:' in the left corner to pop up a list of contacts. To enter an email address manually, tap in the space next to the word 'To:'. If you want to attach a file, tap on the paperclip icon in the bottom-middle part of your screen. Tapping on the Send button in the upper-left corner of the screen places the message in your outbox until you perform another email action.

The Pocket PC's inbox is very similar to the inbox on your desktop PC. If you remember to configure your settings to get around the memory and connection limitations of your PDA, you should find portable email very useful.

Ronald Rosenbaum

For a complete archive of *APC* PDAs columns, see apcmag.com.

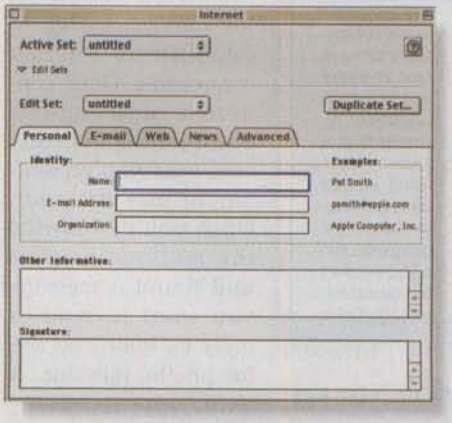
Ronald Rosenbaum can be contacted at ron@ats.au.com.

Organise your Internet settings using the Mac OS Internet control panel.

Under control

The Mac OS Internet control panel is a convenient one-stop location for choosing your Internet preferences. It made its debut in Mac OS 8.5 and received a minor upgrade in Mac OS 9. It is based on the well-established tool Internet Config and enjoys wide support.

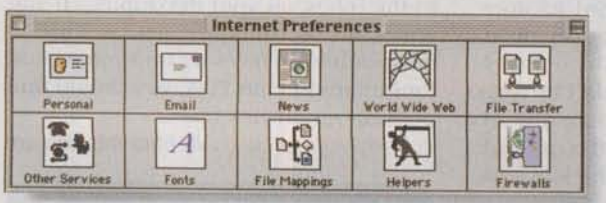
Most applications require some information about you or the way your computer is configured, and there is considerable overlap between the details they need. For example, email and news clients need your name and email address. The address can also be used by an FTP program as the courtesy password for anonymous file transfers, but this is becoming less common.



▲ The Internet control panel gathers together settings affecting Internet applications.

The Internet Config system provides a control panel and a preferences file for managing and storing this information. You only have to enter your details once to make them available to every program that uses this feature. For example, if you decide to switch from one email program to another, there's no need to re-enter all the settings. This means that software developers don't have to create a user interface to handle this information, but many still do.

Apple's Internet control panel was designed to use the same preferences file and extension as Internet Config, so any application that acknowledges Internet Config settings also works with this control panel.



▲ Internet Config puts a different face on the functions of the Internet control panel.

Some Internet Config settings are altered by the Preferences dialog in Internet Explorer and by the Configuration Manager control panel installed with Office 98 (and other Microsoft packages). Avoid opening more than one of these control panels or dialogs at a time. If you change different settings in different windows, you may not end up with the combination you really want. The Internet control panel monitors the Internet Preferences file for changes made by other software, then updates its display and warns you accordingly. Running Internet Explorer at the same time as the Internet control panel is enough to trigger these warnings.



Where do we begin?

The Internet control panel uses a tabbed interface to group related items. The Personal tab contains items related to your identity: name, email address, organisation and 'other information'. The last field is filled out when your computer is interrogated by a Finger server, but if you aren't running a Finger daemon, leave it blank. If you used the Internet Setup Assistant to configure your Mac, some of the fields will already be filled in for you.

If you don't want to disclose personal information online, leave all the items in Personal blank and set the equivalent fields in individual applications only when necessary. Remember, any application can use the Internet Config API to extract information from Internet Preferences without you being aware of it.

The E-mail tab is for your email account name and the names of the mail servers you use. To save time here, change the TCP/IP control panel's user mode to Advanced and set the implicit search path to your ISP's domain name. For example, if you use OzEmail, set the implicit search path to ozemail.com.au. Just enter pop in the Incoming Mail Server field and smtp inthe Outgoing (SMTP) Mail Server field. TCP/IP then expands these entries to pop.ozemail.com.au and smtp.ozemail .com.au. Other ISPs use different names for their servers, but the principle still applies. The drawback to this is that your email client might not generate a proper address for the return of any failure messages.

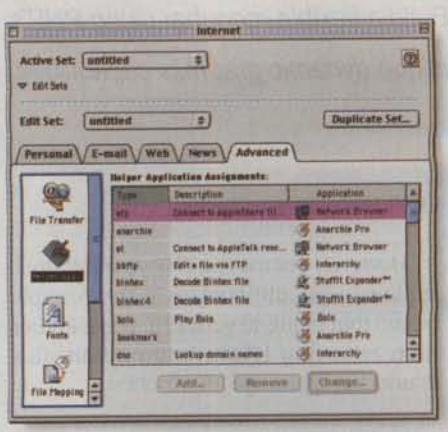
Regardless of the information you've entered in the E-mail tab, don't include your mail password. The problem is not that weak encryption is used to conceal your address from prying eyes, but that Internet Config must provide access to the decrypted password to function. You should also pick a default email application from the pop-up menu if you want the Mail desktop icon to launch your preferred mail client.

The Web tab stores preferred home pages and search sites. Internet Explorer 5 uses the home page setting stored here, but ignores the search page in favour of its built-in smart search facility. It's a good idea to create an Internet Explorer toolbar favourite for quick access to your preferred search page.

In the Web tab you can specify where you want to store downloads on your hard drive. Some people maintain a folder specifically for downloads, but others save files straight to the desktop.

It is important to set your preferred browser as the default. This default browser launches when you select the Browse the Web desktop icon, and also when Sherlock opens the browser to view an item found in an Internet search.

The News tab allows you to specify a News server. The implicit search path technique works here as well. You can also choose the Guest button instead of specifying a username and password. Specify



▲ You rarely need to visit the advanced tab.

the newsreader you want to use by choosing from the pop-up menu.

Advanced Internet settings

If you choose User Mode from the Edit menu, select Advanced and click OK, an additional tab labelled Advanced appears. Like the TCP/IP control panel, this tab is hidden to conceal settings that are unlikely to be needed by the inexperienced. Many experienced Internet surfers don't need to use the Advanced tab either, but it is interesting and instructive to investigate.

The Advanced tab resembles the Macintosh's original Control Panel (before each control panel got its own window). File Transfer allows you to specify default Archie, Info-Mac and UMich servers. These settings allow Interarchy (formerly Anarchie) to automatically use your preferred mirror. It is worth experimenting to see which mirrors are the most responsive.

Helper Apps determines which applications should be loaded when you visit particular types of URLs. These settings are usually predefined or automatically added when you install the appropriate software, and are best left alone unless you know what you are doing.

File Mapping relates PC-style file extensions (.pdf) to Macintosh file types and creator codes (PDF/CARO) so that files downloaded without these codes can be opened correctly. These settings also interact with the PC Exchange tab in the File Exchange control panel. To choose whether a downloaded file of a particular type is saved or opened, click the Show Advanced Options button and make the appropriate choice in the 'Handle by' pop-up menu.

The Advanced tab can also be used to configure firewalls, including a proxy server and a SOCKS firewall. If you want to adjust these, follow instructions from your ISP or IS department.

Store your settings

As with several other control panels, the Internet panel can store and retrieve sets of settings. This is useful if you have an account with more than one ISP, if you connect your PowerBook to the Internet through a corporate network at work and an ISP at home or on the road, or when two or more people share a computer.

If you have a collection of Internet settings, click the Duplicate Set button, make sure the current set is selected, and type in an appropriate name for the duplicate. Choose something meaningful, such as the name of an ISP.

To switch between sets, choose the settings you want to activate from the Active Set pop-up menu. Location Manager can activate an Internet control panel set among many other settings (see *APC* August 2000, page 137). It also allows you to get around the problem that prevents access to TCP/IP by users other than the owner. Set Location Manager's Startup Switching feature to Always, and make sure people know they must restart the computer before logging in and which location set to select.

Internet Config

Internet Config and the Internet control panel are compatible with each other, but don't install a version of Internet Config prior to 2.0.2 (included on this month's cover CD). Older versions are incompatible with Mac OS Help and some other applications.

The main reason for using the Internet Config package is that it allows you to install the Internet Config Switch control strip module. This allows you to switch between Internet settings from the Control Strip without opening the Internet control panel or Internet Config. Internet Config also provides a different user interface and access to at least one setting that isn't available from the Internet control panel: custom email and news headers.

Most Mac users prefer the Internet control panel, but if you use the Control Strip and more than one Internet set, it is worth obtaining the Internet Config Switch. You also get the ICeTEe extension, which allows you to Command-click on a URL in any application that uses the standard TextEdit routines. ICeTEe opens the URL in the appropriate helper application — your browser for an http: URL, or your mail client for a mailto: URL. However, it does not work everywhere; software such as Office:mac bypasses TextEdit in favour of its own routines, and programs such as Newswatcher and Emailer implement this function internally.

Stephen Withers

Mac OS shareware

Cameraid 1.4.4

This is an image viewer and processing utility for digital cameras.

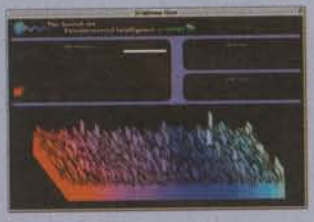


GEDitCOM 2.9.3

Build your family tree using this genealogy program for the Mac. It has a unique customisable interface and an excellent help system.

SETI@Home 3.03

Join the worldwide Search for Extraterrestrial Intelligence with this screensaver program that displays progress charts.



Style Master 1.9

Create document style sheets using Style Master, featuring integrated CSS advice.

URL Manager Pro 2.7.1

Save thousands of Internet addresses directly into a single URL Manager file.

These programs and more can be found on this month's cover CD, along with more detailed reviews.

For a complete archive of *APC* Mac OS columns, see apcmag.com.

Stephen Withers can be contacted at swithers@ozemail.com.au.

Menus made to order

Build a flexible menubar using PHP's unique dynamic graphics capabilities.

PHP is a *hypertext preprocessor* — a language designed for the Web that creates HTML documents dynamically on the Web server. This month, Insite shows you how to use PHP's unique dynamic graphics capabilities to build an updatable menubar. If you are unfamiliar with PHP or other server-side scripting languages such as Perl, ASP or Allaire ColdFusion, check out some of the resources listed in the box to the left.

PHP resources online

PHP distributions
www.php.net

PHP manuals
php.net/docs.php

PHP FAQ
php.net/FAQ.php

Setting up PHP, mySQL and Apache
www.devshed.com/Server_Side/PHP/SoothinglySeamless

PHP tutorials
www.gimpster.com/php/tutorial
www.phphelp.com/tutorial/introducing-php.html
www.devshed.com/Server_Side/PHP/PHP101_1
vsbabu.csoft.net/zope/6tutorials/php
www.builder.com/Programming/PHPIntro/ss01.html

PHP dynamic graphics library for Windows
php.weblogs.com/GD

PHP dynamic graphics library for Linux
www.boutell.com/gd

PHP general resources
php.resourceindex.com
www.zend.com
www.phpwizard.net
px.sklar.com
www.phpbuilder.com

Apache for Windows
www.apache.org/dist/binaries/win32

Apache for Linux
www.apache.org/dist/binaries/linux

The GD library for PHP

PHP has built-in support for a variety of extensions; this allows it to interact with other applications or programming tasks. For example, there are modules that allow you to perform encryption, connect to databases, and send email from within a Web page. There is also a module, called the GD library, that enables you to generate and modify images such as JPG, GIF and PNG files.

To enable the GD library in Windows, edit your C:\windows\php.ini file so that the following line appears under the section called Windows Extensions.

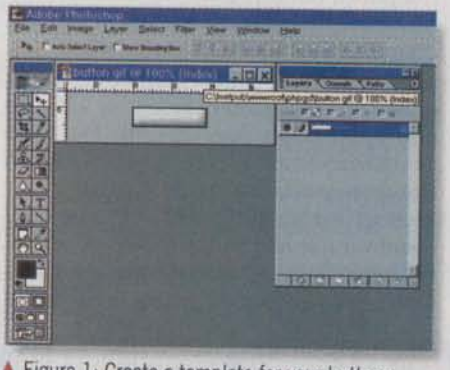
```
extension=php_gd_gif.dll
```

When using the ./configure command in your PHP directory in Linux, you must use the --with-gd=[/path/to/gd] option. Use ./configure --help for a complete list of configuration options.

Create the menu buttons

PHP can generate button graphics from scratch, but you might prefer to use a graphic background that blends in with your site as a template for your buttons. Figure 1 shows a simple button image created in Adobe Photoshop.

Once you have a graphic to use as a background for your buttons, you can use PHP to dynamically add the text to each button and link each to its relevant URL. Usually, when putting images in a Web page, an image tag has an SRC attribute that points to the location of an image file to display, as shown below.



▲ Figure 1: Create a template for your buttons.

```
<IMG SRC="/images/button1.gif">
```

However, when using PHP your IMG tags require an SRC attribute (as in the example below) that points to your PHP page. Rather than returning HTML information, this returns binary image information.

```
<IMG SRC="/button.php?search">
```

All your buttons use the same graphic and the same PHP page, but each has its own text and URL associated with it. Differentiation between the buttons is achieved by passing each button's identity in the URL query string (that is, everything after the question mark in the URL).

Modify the buttons at runtime

Create a new PHP page called button.php with the code from listing 1. Make sure you have no white space at the beginning of the page before the <? tag, or it will cause an error; the page will send blank text to the browser before the binary image.

The first line executed in this page uses the PHP header() to inform the Web browser that it will be receiving a GIF image (binary file) rather than a text or HTML document. The next line creates a variable called $string from the query string parameters. The implode() function can be used to build a string from a collection of variables. The second parameter (" ") indicates the delimiting character to be used between elements.

Next, the imagecreatefromgif() function (from the GD library) is used to create an image object in memory that is a copy of the button.gif template file. The ImageColorAllocate() and ImageString() functions are then called to specify a colour for your button's text as well as its content. The variable $px is used to position the text on the button by determining the width of the image using imagesx(), and the length of the text using strlen(). ImageGif() is then used to write the finished GIF from memory to the browser, before it is deleted using the ImageDestroy() function.

As this page is used to create every button in the menu, the query string must contain the text that needs to be printed on the button. To create a button with the word 'contact' embedded on it, use the following tag.

Insite source code

Listing 1: Adding text to the button graphic

```
<?php
        //button.php
   Header("Content-type: image/gif");
   $string=implode($argv," ");
   $im = imagecreatefromgif("button.gif");
   $colour = ImageColorAllocate($im, 0, 0, 0);
   $px = (imagesx($im)- 9 *strlen($string))/2;
   ImageString($im,10,$px,5,$string,$colour);
   ImageGif($im);
   ImageDestroy($im);
?>
```

Listing 2: Creating a menubar

```
<?
//menu.php
// create menu items & links
$menuitems[0][0] = "info";
$menuitems[0][1] = "info.php";
$menuitems[1][0] = "contact";
$menuitems[1][1] = "contact.php";
$menuitems[2][0] = "search";
$menuitems[2][1] = "search.php";
$menuitems[3][0] = "links";
$menuitems[3][1] = "links.php";

//print out menu
function drawMenu() {
 global $menuitems;
 for ($i = 0; $i <= 3; $i++) {
  eval("\$name = \$menuitems[$i][0];");
  eval("\$url = \$menuitems[$i][1];");
  print "<a href=\"$url\">";
  print "<img src=\"button.php?$name\" ";
  print "alt=\"$name\" ";
  print "border=\"0\"></a>";
 }
}
?>
```

Listing 3: Using the menubar

```
<html>
<head>
        <title>PHP Menu Bar</title>
</head>

<body>
<?
//index.php
//--------------------
include("menu.php");
drawMenu() ;
//--------------------
?>
</body>
</html>
```

For the complete code for all the pages used here, check this month's cover CD.

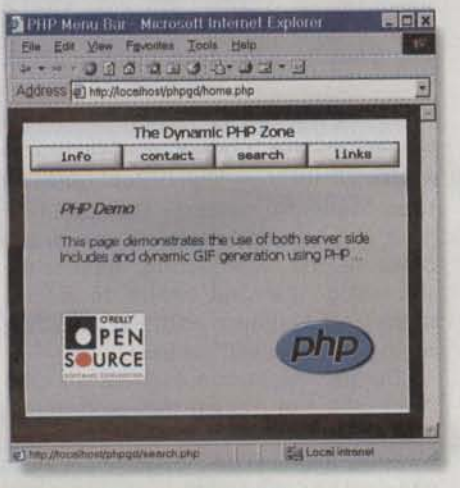
```
<IMG SRC="button.php?contact">
```

To create the menubar you need a series of similar tags, each with its own relevant title, linked to an appropriate URL.

Set up the menubar

Listing 2 demonstrates a way of storing the names and URLs of your buttons in an array. This is an efficient and easy way to manage your menubar. The array can now be used to create the menubar, in concert with a function called drawMenu that loops through the array and prints the HTML for each button.

The first line of this function uses the keyword 'global'. This indicates that the existing $menuitems array is to be used, rather than a local variable of the same name. A for loop is used to cycle from 0 to 3 (this value must reflect the number of buttons stored in the array), and the eval() function is used to create the variables $name and $url for each element in the array. Eval() is a function that allows you to create a text string and execute it as if it was a regular line of code. This is especially useful when creating variables from within loops, as is the case here.



▲ Figure 2: The menubar in action

Menu.php displays the entire menubar as specified in the $menuitems array (see listing 2). Making changes to this menu is easy. You can then use this page as a server-side include to display the menubar on all your Web pages. If you want to change the menu items, you just need to modify this page. Listing 3 shows how menu.php can be used as a server-side include using the built-in PHP include() function.

Further ideas

The dynamic graphics library can do much more than add text to existing images. It can be used to resize graphics, convert file types, modify palettes, and draw lines and shapes. With a bit of clever programming, it can be used to construct line graphs, bar charts or even 3D geometry. Other applications include dynamic banner ads, automatic thumbnail creation or multilingual interfaces for your site.

Next month, Insite looks at using PHP to connect to databases.

Daniel Potts

For a complete archive of *APC* Insite columns, see apcmag.com.

Daniel Potts can be contacted at daniel@indigointeractive.com.au

Explore different ways of storing data in the first instalment of our new project: setting up a school roll.

Present, sir

Most programs have one important thing in common: they store and retrieve data. That means that they need to use files. Files you would be familiar with include your word processor documents, spreadsheets and databases. A Web page is also a file (or more often, a collection of files). Filed data is usually known as *persistent*, meaning that it will still be there when you restart the computer.

Just as there are many uses for files, there are many types of files. Over the next few months, Practical C++ will explore some different ways of storing data in files. To do this, we'll build a school roll program that stores and retrieves student data from different types of files.

Text files

A text file is a simple way to store data. Information is stored as ASCII text, and each line (or record) ends with a known character or sequence of characters. Your C++ source files are text files, and can easily be read with a text editor such as Notepad or vi. In contrast, your executable programs are binary files, built from the C++ source. If you open one with a text editor, the contents look like gibberish.

The first step in building your program is to define a class for the student data. Listing 1 contains the file student.h, which describes your CStudent class.

The file contents are surrounded by #if/#endif to prevent multiple inclusion (see *APC* February, page 114). The main contents begin with the inclusion of the <string> header, which is taken from the standard library. This declares the std::string class that you use to manage strings.

The CStudent class has five data members to contain the student's data: an unsigned integer and four strings. The class has two constructors: one to create an empty object and one to create an object that is initialised. The data members are private, so there are five public functions to retrieve the data. Their syntax is interesting. Below is the function to retrieve the date of birth.

```
const std::string &DOB() const;
```

This function returns a reference to the string inside the CStudent object. In listing 2, dref is a reference variable that is assigned the reference to the m_DOB member inside the 's' CStudent object. The variable 'd' is not a reference variable. The DOB method still returns a reference, but 'd' gets a copy of the m_DOB data member. The const at the beginning of the declaration of DOB() means that the string reference is constant — that is, dref cannot change the contents of the string. 'd' can change its contents as it only changes a copy of the original.

The const at the end of the declaration means that DOB is a constant function; it doesn't change the contents of the object. If you have a constant object (for example, const CStudent s) you can only call constant functions.

The last two member functions, Read() and Write(), are used to read and write the object to a specified stream.



Listing 3 shows the implementation of the methods for your CStudent class. This source file includes four header (include) files. Student.h declares the CStudent class, iostream declares some stream I/O functions and objects, string declares the std::string class and cstdlib declares a number of C library routines, including atoi() which you will use here.

The two constructors initialise the class in the usual way. The five data access methods — StudentNo(), FamilyName(), OtherNames(), Address() and DOB() — are basic and need no explanation.

The Write() function is a little more interesting. It writes all of the data to a std::ostream (output stream), one item per line. The output stream can be std::cout, which writes to the computer screen, or it can be a file stream. File streams will be dealt with in more detail later.

The Read() method reads all the data from a std::istream (input stream) one line at a time. It's best to use getline() rather than the >> operator, as names and addresses contain spaces. The >> operator only reads until the next space, so a name such as 'Billy Jean' is not read correctly. Use the atoi() (ASCII to integer) function to convert the student number from a string to an integer.

Testing times

For good engineering practice, you should unit test this class before proceeding. Listing 4 provides a simple test for this.

The Save() function creates a fully initialised CStudent object, then creates a std::ofstream object. The std::ofstream is an output file stream similar to a std::ostream, but specialised to work with files. You must put the name of the file in the constructor so the std::ofstream constructor opens the file. Check the std::ofstream's bad() method to see if an error occurred opening the file. At the end of the Save() function, the std::ofstream object 'goes out of scope' and is destroyed. The object's destructor then closes the file. Before this happens, use the CStudent object's Write() method to save the student details to the file stream. The Write method is expecting a std:ostream, so you pass it a std::ofstream. That does not present a problem as the std::ofstream class is derived from (is a child class of) the std::ostream class. You can always pass a derived (child) class to a function that expects a base (parent) class.

Having saved your student details to a file, you can read them back using the Retrieve() function. This function creates an empty CStudent object with the default constructor, and a std::ifstream (input file stream) object. Read the student data back from the std::ifstream using the CStudent object's Read() method. Then reuse the Write() method to write the student details to std::cout and display them for checking. The main() function calls the Save() and Retrieve() functions, and reports any errors.

Next month, build a roll program using the CStudent class you've built this month. Until then, keep on coding!

Michael Smith

For a complete archive of *APC* C++ columns, see apcmag.com.

Michael Smith can be contacted at emmenjay@zip.com.au.

C++ source code

Listing 1: Student.h

```
#if !defined( STUDENT_INCLUDED )
#define STUDENT_INCLUDED
#include <string>
class CStudent {
public:
  CStudent();
  CStudent(
    unsigned        sNo,
    const std::string &fNam,
    const std::string &oNam,
    const std::string &addr,
    const std::string &DOB);
  unsigned StudentNo() const;
  const std::string &
       FamilyName() const;
  const std::string &
        OtherName() const;
  const std::string &
         Address() const;
  const std::string &
            DOB() const;
  bool Read(std::istream &is);
  bool Write(std::ostream &os);
private:
  unsigned    m_studNo;
  std::string m_familyName;
  std::string m_otherNames;
  std::string m_address;
  std::string m_DOB;
};
#endif
```

Listing 2

```
#include "student.h"
int
main()
{
  CStudent s(1,
          "Smith",
          "Michael",
"300 George St, Sydney, 2000"
          "07/07/1963");
  const std::string &dref =
             s.DOB();
  std::string &d =
             s.DOB();
  return 0;
}
```

Listing 3: Student.cpp

```
#include "student.h"
#include <iostream>
#include <string>
#include <cstdlib>
CStudent::CStudent()
: m_studNo(0)
{
}
CStudent::CStudent(
    unsigned        sNo,
    const std::string &fNam,
    const std::string &oNam,
    const std::string &addr,
    const std::string &DOB)
: m_studNo(sNo)
, m_familyName(fNam)
, m_otherNames(oNam)
, m_address(addr)
, m_DOB(DOB)
{
}
unsigned
CStudent::StudentNo() const
{
  return m_studNo;
}
const std::string &
CStudent::FamilyName() const
{
  return m_familyName;
}
const std::string &
CStudent::OtherName() const
{
  return m_otherNames;
}
const std::string &
CStudent::Address() const
{
  return m_address;
}
const std::string &
CStudent::DOB() const
{
  return m_DOB;
}
bool
CStudent::Write(
          std::ostream &os)
{
  os << m_studNo
     << std::endl
     << m_familyName
     << std::endl
     << m_otherNames
     << std::endl
     << m_address
     << std::endl
     << m_DOB
     << std::endl;
  return os.good();
}
bool
CStudent::Read(
          std::istream &is)
{
  std::string sTmp;
  std::getline(is, sTmp);
  m_studNo =
       atoi(sTmp.c_str());
  std::getline(is,
          m_familyName);
  std::getline(is,
          m_otherNames);
  std::getline(is,
          m_address);
  std::getline(is, m_DOB);
  return is.good();
}
```

Listing 4: main.cpp

```
#include <iostream>
#include <fstream>
#include "Student.h"
bool
Save(const char *fname)
{
  CStudent s(
     1,
     "Smith",
     "Michael",
 "54 Park St, Sydney, 2000",
     "07/07/2000");
  std::ofstream os(fname);
  if (os.bad())
    return false;
  return s.Write(os);
}
bool
Retrieve(const char *fname)
{
  CStudent s;
  std::ifstream is(fname);
  if (is.bad())
    return false;

  if (!s.Read(is))
    return false;
  return s.Write(std::cout);
}
int
main()
{
  const char *fname =
          "Student.Dat";
  if (!Save(fname)) {
    std::cout
        << "Save Error"
        << std::endl;
    return 1;;
  }
  if (!Retrieve(fname)) {
    std::cout
      << "Retrieve Error"
      << std::endl;
    return 1;;
  }
  return 0;
}
```

All these listings can be found on this month's cover CD.

Revisit arrays and begin to explore abstract data types.

Driven to abstraction

One of the benefits of object-oriented systems is the possibility of using the class structure to create your own customised data types. This month, Practical Java starts to explore the mechanisms and language structures that are used to create abstract data types (ADTs).

Arrays revisited

Implementing abstract data types often requires the use of arrays. An array is an ordered group of variables of the same type. Use the following to declare an array of integers.

```
int[] grades;
```

The array is then created using the new operator.

```
cards = new int[52];
```

You can also create and initialise the array in the same statement.

```
int[] cards = new int[52];
```

The array has a property called 'length' which returns the number of elements the array can hold, as below.

```
System.out.println ("Array cards has" +
cards.length + "elements");
```

The length of an array is the number of elements it can hold. Once the array has been initialised, its length cannot change.

Array alias

When an array variable is assigned to an existing array, both variables refer to the same array, as below.

```
int[] deck;
deck = cards;
```

The array named cards now has an alias called deck. There is still only one set of elements in memory.

Cloning an array

To create a new copy of an array, use Java's built-in clone() method of the Object class. Using clone() requires a typecast as follows.

```
deck = (int[]) cards.clone();
```

Two different arrays have now been created: one named deck and another named cards. Initially, deck contains all the values of cards, but if an element is changed in either array the other one is not affected.

Arrays as parameters

An array can be passed as a parameter to a method. When the method is activated, the array parameter becomes an alias of the array passed as an argument in the call, not a clone. Therefore, the method accesses the same data structure, often using a different name. For example, the following method sets to zero all the elements of any array of type int.

```
public static void clearAll (int[] anArray)
{
  for (int i = 0; i < anArray.length; i++)
    anArray[i] = 0;
}
```

The method can now be called with an array argument such as the following.

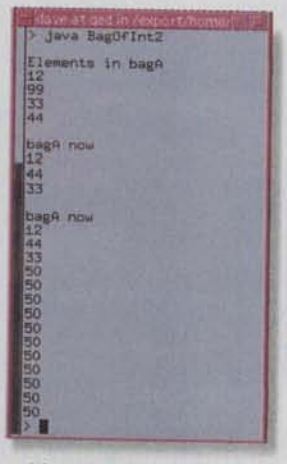
```
clearAll (deck);
```

ADT for a bag of integers

An ADT is programmed by means of a class. For example, the String object is a Java ADT. Another simple data type that can be implemented as an ADT is a bag. A bag is a collection of elements of the same type that are in no particular order. A bag can have duplicate elements;



▲ The elements in a bag are in no particular order.



▲ It's possible to increase bag capacity for more elements.



for example, the collection [8, 2, 8, 8, 7, 6, 2] represents a bag of integers.

Invariants of an ADT

In Java, you can implement a bag of integers of abstract data type using an array of type int. In addition, you can use an instance variable for storing the number of elements in the bag. The rules that determine how the instance variables of an ADT are managed and used are called the ADT invariants. Determining the invariants is an important part of implementing an ADT. Each method that manipulates the ADT (except the constructors) assumes that the invariants are valid. Methods are responsible for ensuring that the invariants remain valid when the method finishes.

Listing 1, BagOfInt.java, implements a bag of integers ADT. You'll see from the code that there are two classes: one is a simple driving class with a main() function, and the second is the IntArrayBag class, which provides all the methods necessary to maintain a bag of integers. Some of these functions are called in your driving class.

Adding a new integer is straightforward; just add the new item to the end of your array. However, to remove an element

Java source code

Note: Text that appears in italics is explanation only, not code.

Listing 1: An abstract data type for a bag of integers

```
public class BagOfInt
{
Driver class
  public static void main(String[] args)
  {
    IntArrayBag bagA = new IntArrayBag (10);

    bagA.addElement (12);
    bagA.addElement (99);
    bagA.addElement (33);
    bagA.addElement (44);

    System.out.println ("\nElements in bagA");
    bagA.showBag ();

    bagA.removeElement (99);
    System.out.println ("\nbagA now");
    bagA.showBag ();
  }
}

class IntArrayBag
{
Our ADT for a bag of integers
Invariants:
1. The instance variable bagItems holds the number of elements in a bag.
2. An empty bag has no elements.
3. A non-empty bag has elements stored in offset 0 to offset bagItems. All
elements beyond bagItems are meaningless.

  private int[] data;
  private int bagItems;

  public IntArrayBag ()
  {
    data = new int[10];
    bagItems = 0;
  }

  public IntArrayBag (int initialSize)
  {
    bagItems = 0;
    data = new int[initialSize];
  }

  public void addElement (int element)
  {
    data[bagItems] = element;
    bagItems++;
  }

  public void showBag ()
  {
    if (bagItems == 0)
      return;
```

from a bag, you must search for the first occurrence of the element. If the element is found in the bag, you remove it by taking the last element of the bag and then moving it to the position of the found element. You can do this because the definition of a bag determines that the elements are in no particular order.

The removeElement() method returns true if the target element was found in the bag, and false if not. Any calling code can examine the returned value, if desired, and act accordingly.

Manipulating bag capacity

There's one problem with our program. Bag operations shouldn't assume that there is sufficient capacity in the bag to store new elements (the current addElement() method doesn't check this). Code should first test if there is space in a bag before inserting a new element. If the bag is at its limit, it can be expanded before performing the insertion.

The System class in the standard Java package contains a method named arraycopy() that copies one array into another. The method's parameters are as follows.

```
arraycopy (source, sourceOffset, destination,
destOffset, count);
```

This method copies count items from the array source, starting at element sourceOffset. These elements are copied into the destination array, beginning at position destOffset.

If the source and destination parameters are the same array, then the method creates a temporary storage space into which the items are first copied. This makes it possible to use arraycopy() to close gaps by performing an overlapping copy within a single array.

More importantly, you can also use arraycopy() to expand the capacity of a bag. This can be done by creating a local array that is larger than the original one, copying the elements of the old array into the new one, and then assigning the new array to the object's data variable.

The following method adds five elements to an existing array.

```
public void expandBag ()
{
  int biggerBag[] = new int[data.length + 5];
   System.arraycopy (data, 0, biggerBag, 0,
bagItems);
  data = biggerBag;
}
```

If you want to add an element to your bag when it is full, adjust the addElements() method so that it calls expandBag(). This has been done in the addElements() method in listing 2, BagOfInt2.java. You'll also notice that there's a for loop in the driver class for that listing so that you can add many elements to the bag. These elements will exceed the size of the bag several times, but the program will work fine and display all the elements. This is because the bag is being expanded automatically.

Next month, Practical Java moves on to working with the data type known as a list.

David Williams

David Williams can be contacted at dave@qed.newcastle.edu.au.

For a complete archive of *APC* Java columns, see apcmag.com.

```
  for (int i = 0; i < bagItems; i++)
    System.out.println (data[i]);
 }

 public boolean removeElement (int target)
 {
  if (bagItems == 0)
    return false;

  for (int i = 0; i < bagItems; i++)
  {
    if (data[i] == target)
    {
      data[i] = data[bagItems - 1];
      bagItems--;
      return true;
    }
  }

  return false;
 }
}
```

Listing 2: An abstract data type for a bag of integers that expands to accomodate more elements

```
public class BagOfInt2
{
Driver class
 public static void main(String[] args)
 {
  IntArrayBag2 bagA = new IntArrayBag2 (10);

  bagA.addElement (12);
  bagA.addElement (99);
  bagA.addElement (33);
  bagA.addElement (44);

  System.out.println ("\nElements in bagA");
  bagA.showBag ();

  bagA.removeElement (99);
  System.out.println ("\nbagA now");
  bagA.showBag ();

  for (int i = 0; i < 11; i++)
    bagA.addElement (50);

  System.out.println ("\nbagA now");
  bagA.showBag ();
 }
}

class IntArrayBag2
{
Our ADT for a bag of integers
Invariants:
1. The instance variable bagItems holds the number of elements in a bag.
2. An empty bag has no elements.
3. A non-empty bag has elements stored in offset 0 to offset bagItems.
All elements beyond bagItems are meaningless.

 private int[] data;
 private int bagItems;

 public IntArrayBag2 ()
 {
  data = new int[10];
  bagItems = 0;
 }

 public IntArrayBag2 (int initialSize)
 {
  bagItems = 0;
  data = new int[initialSize];
 }

 public void addElement (int element)
 {
  if (bagItems == data.length)
    expandBag ();

  data[bagItems] = element;
  bagItems++;
 }

 public void expandBag ()
 {
  int biggerBag[] = new int[data.length + 5];
  System.arraycopy (data, 0, biggerBag, 0, bagItems);
  data = biggerBag;
 }

 public void showBag ()
 {
  if (bagItems == 0)
    return;

  for (int i = 0; i < bagItems; i++)
    System.out.println (data[i]);
 }

 public boolean removeElement (int target)
 {
  if (bagItems == 0)
    return false;

  for (int i = 0; i < bagItems; i++)
  {
    if (data[i] == target)
    {
      data[i] = data[bagItems - 1];
      bagItems--;
      return true;
    }
  }

  return false;
 }
}
```

This listing can be found on this month's cover CD.

Australian Personal Computer

PC SUPERMARKET CHANNEL

PRODUCTS FOR SALE

For advertising details contact Jeanette Gray on (02) 9288 9151

EcomComputers

Sydney CBD 33 York St Ph: 9299 0022 Fax: 9290 1173
Chatswood 27 Albert Ave Ph: 9415 1981 Fax: 9415 2150
Erina 202 The Entrance Rd Ph: 4367 0299 Fax: 4367 0298
Hurstville 1 Woodville St Ph: 9585 8565 Fax: 9585 8566
Parramatta 38 George St Ph: 9687 1896 Fax: 9687 3757

www.ecomcomputers.com.au

Please call to confirm availability of all offers.

Open 7 Days - (Sydney & Erina 6 Days)
Mon - Fri 9am - 6pm, Sat 10am - 4pm, Sun 10am - 3pm

Finance toapproved purchasers through A.G.C. for Private or Flexirent for Business

COMPAQ Desktops

Desk Pro EP

Intel® Celeron® 500MHz
Intel® i810 Chipset
64MB 100MHz SDRAM
6.4GB Ultra ATA HDD
Intel® i810 AGP Video
1.44mb FDD
Integrated Audio & Speakers
Compaq 104 Keyboard
Compaq Mouse
15" Compaq Monitor
MS Windows® 98
3y (1 y On-Site) Warranty

HOT PRICE

$999

DeskPro SB C566

Intel® Celeron® 566MHz
Intel® i810 Chipset
64MB SDRAM
8.4GB Ultra ATA HDD
Intel® i810 AGP Video
1.44mb FDD
40X CD ROM Drive
Integrated Business Audio
JBL Pro Speakers
56K Modem
Compaq 104 Keyboard
Compaq Mouse
15" Compaq Monitor
MS Windows® 98 SE
3y Warranty (1y OnSite)

$1299

MS OFFICE SB OEM $299 With any system

Desk Pro SB PIII 800

Intel® Pentium® III 800MHz
Intel® i810 Chipset
128MB SDRAM
20GB Ultra ATA HDD
Intel® i810 AGP Video
1.44mb FDD
48X CD ROM Drive
Integrated Business Audio
JBL Pro Speakers
56K Modem
Compaq 104 Keyboard
Compaq Mouse
17" Compaq Monitor
MS Windows® 98 SE
3y Warranty (1y OnSite)

$1999

Options:
Upgrade to 12xDVD $99
Compaq 10/100 NIC $129

Presario PIII 933

Presario 7000 model
Intel® Pentium® III 933MHz
128MB SDRAM
30GB Ultra ATA HDD
16m nVidia TNT2 AGP Video
1.44mb FDD
DVD ROM &
CD-ROM Burner
Sound Blaster 128V Audio
JBL Pro Speakers
Compaq 56k V.90 Modem
Easy Access Keyboard
Compaq Scroll Mouse
17" Compaq MV740 Monitor
MS Windows® 98 SE
MS Word 2000, Works
MS Encarta, MS Money
(1y OnSite Warranty)

$3599

ECOM CUSTOM SYSTEMS

Ecom SOHO 650

Pentium® III 650
64MB 133MHz SDRAM
10GB UATA 66 HDD
8Mb AGP 3D Video
1.44mb FDD
ATX 250w MIDI Case
40x CD ROM Drive
PCI 3D Soundcard
Amplified Stereo Speakers
56k Data/Fax/Voice Modem
104 Keyboard
Mouse & Pad
15" Monitor
MS Windows® 98
1 years RTB Warranty

$1299

Ecom SOHO 866

Intel® Pentium® III 866MHz
or AMD Athlon 900 MHz
128MB 133MHz SDRAM
20GB Ultra ATA 100 HDD
32m nVidia TNT2 AGP Video
1.44mb FDD
Aopen 250w MIDI Case
Creative 32x8x4 CD Burner
10x DVD ROM
Sound Blaster 128V Audio
Amplified Stereo Speakers
56k Data/Fax/Voice Modem
BTC 104 Keyboard
Logitech Scroll Mouse
17" Samsung Monitor
MS Windows® 98 SE or ME
Norton Antivirus 2000
1 years Limited Warranty

$2299

Ecom Signature 1GHz

Latest Feature: U-ATA100
P III 1GHz or AMD Athlon 1GHz
128MB 133MHz SDRAM
30GB UATA 7200rpm HDD
32m GeForce-2 MX Video
1.44mb FDD
Aopen 250w MIDI Case
16x DVD & 32x8x4 CD Burner
Sound Blaster Live OEM
AltecLansing Subwoofer spker
56k Data/Fax/Voice Modem
Logitech Multimedia Keyboard
Logitech Scroll Mouse
17" Samsung Flat Monitor
(Model 753DF 0.20 mm)
MS Windows® 98 or ME
Norton Antivirus 2000
3 years Limited Warranty

$2999

Ecom GT4 1.3GHz

Intel® Pentium 4 ® 1.3 GHz CPU
256MB RDRAM (PC 800)
45GB UATA 100 HDD
64m GeForce-2 GTS Video
Creative 32x8x4 CD Burner
Pioneer 16x DVD ROM Drive
Deluxe 250w MIDI Case
Sound Blaster Live Value
AltecLansing Subwoofer spker
56k Data/Fax/Voice Modem
Logitech Multimedia Keyboard
Logitech Scroll Mouse
19" Hitachi CM771 Flat Monitor
MS Windows® 98 SE or ME
3 years Limited Warranty

$4799

COMPAQ Notebook Specials

***while stocks last*

Presario 12XL103

AMD® K6-II 450MHz
5.0GB Ultra DMA HDD
64MB SyncDRAM
Trident Cyberblade 4MB video
24X CD ROM 1.44mb FDD
56Kbs ITUU V.90 Int. Modem
12.1" HPA Screen
JBL Pro Audio System
MS Windows® 98 SE
1y RTB Wrnty (Inc.1y Parts & Labour)

*Free Word 2000 & Works***

PRICE CRASH

$1999

Presario 12XL412

Intel® Pentium® III 750MHz
10.0GB Ultra DMA HDD
64MB SyncDRAM
Trident Cyberblade 4MB video
24X CD ROM
1.44mb FDD
56Kbs ITUU V.90 Int. Modem
13.3" TFT Screen
JBL Pro Audio System
MS Windows® 98 SE
1y RTB Warranty (Including1y Parts & Labour)

*Free Word 2000 & Works***

$3699

ThinkPad i Series

1200 - 41M
Celeron® 550MHz
5.0GB HDD
64MB SDRAM
24x CD & 1.44FDD
Stereo Audio
56K Modem
12.1" Active Matrix TFT
MS Windows® ME
Lotus SmartSuite
Quicken98



$2399

Incredible Notebook

Ecom 1000MHz

Intel® Pentium® III 1000MHz
20GB Ultra DMA HDD
128MB SDRAM
64Mb 3D Video
8X DVD
1.44mb FDD
56Kbs Int. Modem
10/100 Base Ethernet
14.1" TFT Screen
I-EEE 1394 Firewire Port
Stereo Audio System
MS Windows® ME
1y Warranty

64Mb Video

Digital Video Firewire Enabled

$4999

TREND InterScan



InterScan® VirusWall® provides scalable, high-performance, three-in-one Internet gateway protection against viruses and malicious code. **InterScan** installs on the gateway server and runs on Linux and other Unix's. **Detects** and **removes viruses** from inbound and outbound **email** in **real time**. Blocks unsolicited email (spams) and more...

TREND MICRO your Internet VirusWall

Special Price - $218 for up to 25 users



$63.25



$85





$83.20

$42



$105

One of Australia's most popular distributions.

Personal - 3 Cd's, 3 manuals
Pro - 6 Cd's,1 DVD, 4 manuals

The complete package for office and home use. Popular because of it's value for money, and ease of use. Includes StarOffice 5.2 wordprocessor, and a huge array of additional applications and utilities. Includes minimum of 60 days installation support. Personal ed to suite home/office users. Pro ed to suite business-use and advanced.



Personal $69.95 Professional $110.00

Linux Games PRICE BLITZ





Quake III - $42 Rest - $29 each - All 5 for $122

The Complete Linux Shell Programming Training Course

by E.Quigly S.Hawkins
ISBN: 0130406767



Book+Multimedia Interactive training course. Runs on Windows or Linux. The fastest, easiest way to master Linux/Unix shell programming. 10 hours of instructional audio, 30 animations, and hundreds of interactive questions and programming excercises. Covers bash, tcsh, grep, sed and gawk. PLUS the kernel-shell relationship, system calls, redirections and pipes and loops.

RRP: $209.95 **Our Price: $176.40**



$65.50



$84



$65.50



$65.50



JUMBO VI Reference MUG

$15



Red Hat Linux 7

PRO $331
DLX $154
STD $51.70



Red Hat Deluxe Workstation



Red Hat Professional Server

Australian Installation Support



Red Hat Training

RH033 - Introduction to Red Hat Linux
Suited to users who are new to RedHat Linux, wishing to understand and practice the basics in order to be successful with their own Red Hat Linux system.

RH133 - RedHat Linux System Admin
Linux or UNIX users with an understanding of the basics of Red Hat Linux who want technical training to become a Linux system administrator.

RH253 - Red Hat Linux Networking and Security
Linux or UNIX system administrators who already have some practical experience with Red Hat Linux systems administration and want to develop their networking services and security skills.

RH300 - Red Hat Certified Engineer Course
4 Day Certification course designed for Unix and Linux experienced administrators wishing to fast-track to a formal Red Hat Certification

See our web site for more details...

Linux PowerPC



Yellow Dog Linux
$102.30



$167.20



$94.60



$104.50

PLEXWRITER 12/10/32S



12X CD-Write
10X CD-ReWrite
32X max CD-Read
Works with Linux and Most Unix Systems

BURN-Proof
Ultra SCSI

- Ultra SCSI Interface
- BURN-Proof technology eliminates

$741.30

Also 12xW 4xRW 32xR $626.20

Sick of sticky Balls?



Look No Balls!

Enhanced precision with optical engine, eliminates moving parts and dust accumulation. Requires No Special Mouse Mat! 2 Button Plus Scroll/Click (Can be used as a third button)

$37.95

www.everythinglinux.com.au

The Alternative Operating System Store



Sydney store : 79a Great North Rd, Five Dock, 2046
Phone: 02 9712 1799 Fax: 02 9712 3977

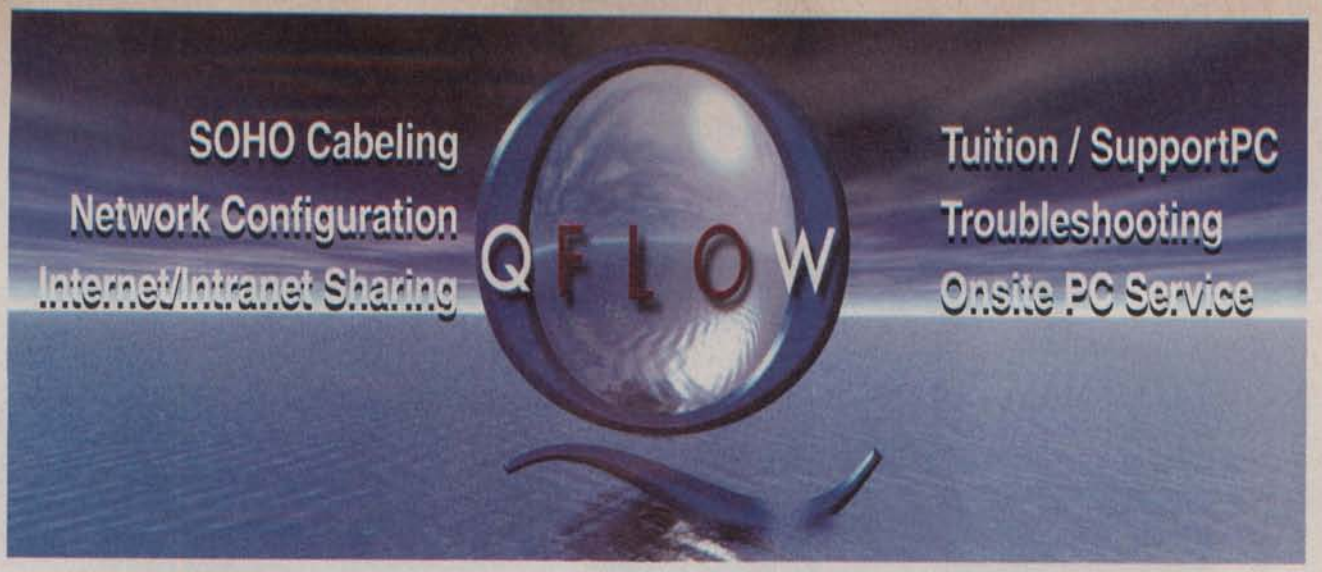
Prices subject to change without notice
Check website for latest prices All prices include GST.

Come see us at the Linux Expo
www.linuxexpo.com.au

Linux Business Expo 7-9 March 2001
Open Source Conference 8-9 March 2001
Sydney Convention & Exhibition Centre



You DONT need a credit card to order online



Internet C-700

* Intel Celeron 700 CPU
* Gigabyte Intel 810 Chips MBD
* 64MB PC100MHz SDRAM
* 10GB Seagate UDMA ATA100 HDD
* Panasonic 48X CD-ROM
* Panasonic 1.44MB Floppy
* Intel integrated 4X AGP Graphic
* Intel integrate 3D sound
* A Open KF45A ATX 250W Midi Case
* LG 15" STUDIOWORKS 552i Monitor
* Acer Win 98 PS/2 Keyboard
* Logitech 2 Button PS/2 Mice
* Emcom 105 Quality Speaker
* Nettcom 56K Internal Fax Modem
* Win Me on CD and Pre-loaded

$1368 Inc. GST

Executive PIII-866

* Intel PIII-866 CPU
* Shuttle AV11, UDMA 66, 133MHz MB
* 128MB PC133MHz SDRAM
* 20G Seagate UDMA ATA100 HDD
* Panasonic 8X DVD
* Panasonic 1.44MB Floppy
* 32M RIVA TNT M64 Graphic
* Creative Vibra 128 3D Sound
* AOpen KF-45A ATX 250W Midi Case
* Panasonic 17" E70i Monitor
* MS Internet PS/2 Keyboard
* MS Intellimouse PS/2 Mice
* *Emcom MS115 Subwoofer System*
* Nettcom 56K Fax Modem
* Microsoft Me on CD and Pre-loaded

$2158 Inc. GST



(Picture for illustration Only)

Power PIII-1000

* Intel PIII-1000 CPU
* Shuttle AV14, UDMA 66, 133MHz MB
* 128MB PC133MHz SDRAM
* 30G Seagate UDMA 66ATA HDD
* Pioneer 16X DVD
* Panasonic 1.44MB Floppy
* 32MB GeForce2 MX Graphic
* Creative Vibra 128 3D Sound
* AOpen KF-45A ATX 250W Midi Case
* Panasonic 17" E70i Monitor
* MS Internet PS/2 Keyboard
* MS Intellimouse PS/2 Mice
* Emcom MS115 Subwoofer Speaker
* Nettcom 56K Fax Modem
* Win Me on CD and Pre-loaded

$2638 Inc. GST

Qflow Home900

* AMD K7/900 CPU
* Gigabyte K7 ATX Mainboard
* 128MB PC133MHz DRAM
* 20G Seagate 7200 Rpm HDD
* Panasonic 1.44MB Floppy
* 32MB Creative Geforce2 MX Video
* 16X Pioneer DVD Rom
* 17" Panasonic E70i Monitor
* Acer PS/2 Keyboard
* Logitech 3 Button Mouse
* Creative Vibra 128 3D Sound Card
* Emcom MS115 Subwoofer Speaker
* Microsoft Me On CD & Preload

$2138 Inc. GST

Speedo1.2G

* AMD K7/1.2 GHz CPU
* Asus A7V MBD
* 128 MB PC133MHz SDRAM
* 45G IBM 7200 RPM ATA100 HDD
* Poineer 16X DVD
* Sony 32/10/4 4 MB Buffer CD Rewriter
* Panasonic 1.44MB Floppy
* 32 MB GeForce II GTS Graphic Card
* Creative Soundblaster Live Value
* AOpen HX-45 ATX 250W Midi Case
* Panasonic 17" E70i Monitor
* MS Internet PS/2 Keyboard
* MS Intellimouse PS/2 Mice
* Emcom MS115 Speaker
* Nettcom 56K Internal Fax Modem
* Win Me on CD and Pre-loaded

$2998 Inc. GST

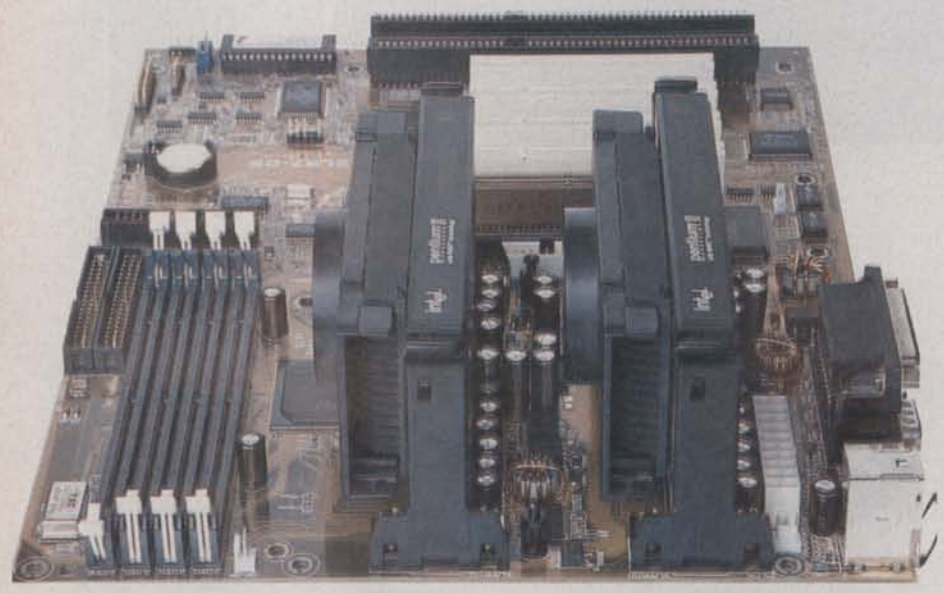
Please Call For Latest Pricing!

BEST SERVICE, BEST QUALITY.

WWW.QFLOW.COM.AU

Auburn	Belrose	Eastwood	Five Dock	Newcastle	Waverton
Shop 10 191 Parramatta Rd. Ph. 9648 1811 Fax. 9648 1711	Shop 31 Glenrose Shopping Centre Ph. 9453 4388 Fax. 9453 4788	Shop 39 Eastwood Shopping Centre Ph. 9874 9211 Fax. 9874 9311	Shop 1 128 Great North Rd. Ph. 9713 8649 Fax. 9713 8719	805 Hunter St. Ph. (02) 4940 0030 Fax. (02) 4969 8522	Shop 6 100 Bay Rd. Ph. 9959 3944 Fax. 9959 3945

Even Higher Performance!



These are just sample configurations - call for your requirements or build a system at our web site www.sigma.com.au

Dual 1GHz Pentium III Windows 2000 Workstation

- 2 x 1GHz Pentium III CPU
- Asus P2B-D Motherboard
- 256Mb 100MHz Cert SDRAM
- IBM 30Gb ATA100 7200rpm HD
- Elsa Gladiac GeForce II 32Mb
- Pioneer 105S Slot DVD Drive
- Sony 1.44 Floppy Drive
- Soundblaster Live! OEM
- Chenbro Full Tower Case
- Sony E200 17" Monitor
- Windows 2000 Pro
- MS Pro kbd, MS IntelliMouse

$6,659 inc GST

19" Rackmount Windows 2000 Server

- 2 x 850MHz Pentium III
- Asus P2B-D Motherboard
- 512Mb 100MHz SDRAM
- IBM 60Gb 7200rpm HD
- Matrox G450 VGA
- Sony 48x CD ROM Drive
- Sony 1.44 Floppy Drive
- 19" Rackmount Case
- Windows 2000 Server
- MS Pro kbd & IntelliMouse

$5,939 inc GST

Windows 2000 300Gb File Server

- 2 x 850MHz Pentium III
- 512Mb 100MHz SDRAM
- IBM 30Gb 7200rpm HD
- 4 x IBM 75Gb IDE Drives
- Matrox G450 VGA
- Sony 48x CD ROM Drive
- Sony 1.44 Floppy Drive
- Chenbro Cube Server Case
- Windows 2000 Server
- MS Pro kbd & IntelliMouse

$9,769 inc GST

1GHz Pentium III 3D Graphics Workstation

- 1GHz Pentium III CPU
- 512Mb 133MHz SDRAM
- IBM 45Gb 7200rpm HD
- Elsa Gladiac 32Mb
- Sony 19" G400 Monitor
- Pioneer 105S DVD Drive
- Sony 1.44 Floppy Drive
- Chenbro Full Tower Case
- Windows 2000 Pro
- MS Pro kbd & IntelliMouse

$5,899 inc GST

matrox Digital Video Solutions

SONY

ASUS

adaptec

canopus

Check out our online ordering service at www.sigma.com.au

MATROX DIGISUITE

SIGMACOM PTY LTD

ABN 55 065 279 101
www.sigma.com.au
sales@sigma.com.au

Tel (02) 9589 2300
Fax (02) 9589 2311

FREE

CANON COLOUR PRINTER
AND SCANNER
OR
SONY OR MITSUBISHI
CD RE-WRITER

INTEL PRICE EXPLOSION



VISIT OUR SHOWROOMS 7 DAYS

UNIVERSAL MICRO

Suite 2, 1059 Victoria Road
WEST RYDE (opposite Shell)
Email: sales@universalmicro.com.au

Telephone 9804 8666 • Facsimile 9804 8655

INTEL 866 MHZ $1799
INTEL 933 MHZ $1899

INTERNET READY I1127
128 MB 133 MHZ SD RAM
56 K V.90 FAX / DATA MODEM
15" DIGITAL PHILIPS MONITOR
* FREE UPGRADE TO 17" PHILIPS
32 MB AGP TNT INTEGRATED GRAPHICS
10.2 GB HARD DRIVE
* FREE UPGRADE TO 20.4 GB HARD DISK
52 X CD ROM DRIVE, 1.44 FLOPPY
16 BIT INTEGRATED SOUND
PS2 KEYBOARD AND MOUSE, ANTI-VIRUS

INTEL 866 MHZ $2299
INTEL 1 GHZ $2399

INTEL815 INT1212
INTEL 815 4 X AGP MOTHERBOARD
128 MB 133 MHZ SD RAM
HITACHI 12 X DVD ROM DRIVE
32 MB GEFORCE II MX AGP GRAPHICS CARD
* FREE UPGRADE TO 64MB GRAPHICS
17" PHILIPS (0.25 DPI)107B MONITOR
CREATIVE 128 SOUND BLASTER
30.4 GB SEAGATE HARD DISK
SAMSUNG KEYBOARD & WHEEL MOUSE
56 K V.90 FAX / DATA MODEM
480 WATT SPEAKER SYSTEM, ANTIVIRUS

INTEL 866 MHZ $2899
INTEL 1 GHZ $2999

HOME ENTERTAINMENT E0401
GENUINE *INTEL 815* 4 X AGP MOTHERBOARD
128 MB 133 MHZ SD RAM
* FREE UPGRADE TO 256 MB SD RAM
64MB AGP 3D GRAPHICS CARD
17" PHILIPS (0.25 DPI) 107B MONITOR
* FREE UPGRADE TO FLAT MONITOR
HITACHI DVD ROM DRIVE
LOGITECH CORDLESS KEYBOARD & MOUSE
CREATIVE CAMBRIDGE 5PCS FPS1000 SUBWOOFER
DIAMOND MONSTER MX400 SOUND
30 GB IBM/SEAGATE HARD DISK
* FREE UPGRADE TO 40 GB HARD DISK
56 K V.90 FAX / DATA MODEM

PRINTERS	
* CANON BJC 1000 COLOR PRINTER	$115
* CANON BJC 2100 COLOR PRINTER	$155
* CANON BJC 3000 COLOR PRINTER	$255
* CANON BJC 50	$545
* CANON LBP 800 LASER PRINTER	$490
* EPSON STYLUS 480 COLOR PRINTER	$145
* EPSON STYLUS 680 COLOR PRINTER	$287
* EPSON PHOTO 870 COLOR PRINTER	$607
* HP DESKJET 640C COLOR PRINTER	$178
* HP DESKJET 840C COLOR PRINTER	$269
* HP DESKJET 950C COLOR PRINTER	$487
* HP LASERJET 1100	$679
ACCESSORIES	
* CANON FLATBED 340P SCANNER	$115
* CANON FLATBED 640P SCANNER	$165
* CANON FLATBED 650U SCANNER	$195
* ACER 640U FLATBED SCANNER (600 X 1200)	$165
* MS WORKS SUITE 20000 (WITH SYSTEM)	$145
(MS WORD 2000, MS WORKS 2000, MS ENCARTA WORLD ATLAS, MS MONEY 2000, MS GRAPHICS)	
* LG / ACER / SONY 32 X 8 X 4 CD RE-WRITER	$245
* MS OFFICE 2000 SBE (WITH SYSTEM)	$365
(MS WORDS 2000, MS EXCEL 2000, MS PUBLISHER, MS OUTLOOK, MS SMALL BUSINESS TOOLS)	
* MS OFFICE 2000 PRO (WITH SYSTEM)	$470
(MS WORDS 2000, MS EXCEL 2000, MS PUBLISHER, MS OUTLOOK, MS ACCESS, MS POWERPOINT)	
* INTERNAL 100 MB ZIP DRIVE	$115
* EXTERNAL 100 MB ZIP DRIVE	$190
MONITORS	
* 15" MULTIMEDIA PROVIEW MONITOR (WITH SPEAKERS) $245	
* 15" PHILIPS MONITOR	$255
* 17" PHILIPS 107E MONITOR 0.27 DPI SHORT NECK	$395
* 17" PHILIPS 107B MONITOR 0.25 DPI SHORT NECK	$495
* 17" SAMSUNG FLAT MONITOR	$490
* 17" SONY MONITOR	$659
* 19" SONY CPDG400 MONITOR	$1289
* 19" AURIGA DIGITAL MONITOR	$640
* 19" HITACHI CM771 FLAT MONITOR	$870
* 21" HITACHI CM771 FLAT MONITOR	$1699
CPU	
* INTEL CELERON 667 MHZ	$175
* INTEL PENTIUM III 866 MHZ (133 MHZ)	$420
* INTEL PENTIUM III 933 MHZ (133 MHZ)	$550
* INTEL PENTIUM III 933 MHZ (133 MHZ)	$640
* AMD DURON 800 MHZ WITH FAN	$199
* AMD DURON 850 MHZ WITH FAN	$264
* AMD ATHLON 800 MHZ WITH FAN	$265
* AMD ATHLON 900 MHZ WITH FAN	$339
* AMD ATHLON 1 GHZ WITH FAN	$415
HARD DISK	
* 10 GB ULTRA DMA ATA 66 HARD DISK	$189
* 20 GB ULTRA DMA ATA 66 HARD DISK	$210
* 30 GB ULTRA DMA ATA 66 HARD DISK	$265
MEMORY	
* 64 MB SD RAM 133 MHZ	$70
* 128 MB SD RAM 133 MHZ	$105
* 256 MB SD RAM 133 MHZ	$235

AMD ATHLON 900 MHZ $1999
AMD ATHLON 1.2 GHZ $2399

GAME PRO 2001
ASUS MOTHERBOARD
128MB PC/133 MHZ FAST SD RAM
10.2 GB FUJITSU / SEAGATE HARD DISK
* FREE UPGRADE TO 20GB UDMA
32 MB TNT II AGP VIDEO CARD
* FREE UPGRADE TO 64MB GRAPHICS
17" PHILIPS (0.25 DPI) MONITOR
1.44 FLOPPY DISK DRIVE
52 X CD ROM DRIVE, 56K INTERNAL MODEM
CREATIVE SOUND BLASTER 128 PCI
SAMSUNG KEYBOARD & WHEEL MOUSE
480 WATT SPEAKER SYSTEM

INTEL PIII 866 MHZ $1799
INTEL PIII 1 GHZ $1899

MITSUBISHI COLLECTION MINT04
MITSUBISHI 52 X CD ROM DRIVE
MITSUBISHI 17" DIGITAL 1770F MONITOR
MITSUBISHI PS2 KEYBOARD, WHEEL MOUSE
MITSUBISHI 1.44 FLOPPY DISK DRIVE
MS WINDOWS 98 SE OR WINDOWS ME
128MB PC/133 MHZ FAST SDRAM
10.2 GB SEAGATE U/ATA100 HARD DISK
32 MB AGP TNT GRAPHICS
56K INTERNAL V.90 MODEM
3D SOUND AND SPEAKER

AMD DURON 800 MHZ $1599
AMD ATHLON 1 GHZ $1899

GAME PRO 2001
128MB PC/133 MHZ FAST SD RAM
10.2 GB FUJITSU / SEAGATE HARD DISK
32 MB TNT II AGP VIDEO CARD
17" PHILIPS DIGITAL MONITOR
1.44 FLOPPY DISK DRIVE
52 X CD ROM DRIVE
56K INTERNAL FAX MODEM
SAMSUNG KEYBOARD & WHEEL MOUSE
3D SOUND AND SPEAKER

APRIL CLEARANCE SALE*

MicroJet™ printer cartridges

*100% Performance *Money Back Guarantee
*No Clogging *Highest Quality ultra USA ink

Model	Compatible with:	RRP Unit price
HC-01	HP51626A (40ML) (BLACK)	$43.50
HC-02	HP51625A (40ML) (COLOUR) (FOR HP DeskJet Plus 400/500 Series, Desk Writer C/500 Series)	$46.50
HC-03	HP51629A (40ML) (BLACK)	$45.00
HC-04	HP51649A (40ML) (COLOUR) (FOR HP DeskJet 600, 660, 670, 672, 680, 682, 690, 692, 693, 694, 695, Desk Writer 600, 660, 680,Office Jet 500, 520, 570, 580, 590, 600, 610, 630, 635 AND Printer/Scanner/Copier 370, 380)	$48.00
HC-C03	HPC6614A (40ML) (BLACK) (FOR HP DeskJet 610C, 612C)	$45.00
EC-03	EPSON S020047 (BLACK) (FOR EPSON STYLUS COLOUR II, IIS, COLOUR 200, STYLUS 200, 820)	$18.80
EC-04	EPSON S020049 (COLOUR) (FOR EPSON STYLUS COLOUR II, IIS, STYLUS 820, 1520)	$21.50
EC-05	EPSON S020093 (BLACK) (FOR EPSON STYLUS COLOUR 400, 500, 600, 700, PHOTO EX, EX2)	$18.80
EC-06	EPSON S020089 (COLOUR) (FOR EPSON STYLUS COLOUR 400, 600, 800, 1520)	$21.50
EC-07	EPSON S020108 (BLACK) (FOR EPSON STYLUS COLOUR 800, 850, 1520)	$18.80
EC-08	EPSON S20110 (COLOUR) (FOR EPSON STYLUS PHOTO, PHOTO 700, PHOTO EX)	$22.50
EC-10	EPSON S020097 (COLOUR) (FOR EPSON STYLUS COLOUR 200, 500)	$21.50
EC-19	EPSON S020187 (BLACK) (FOR EPSON STYLUS COLOUR 440, 460, 640, PHOTO 750, PHOTO 1200)	$18.80
EC-20	EPSON S020191 (COLOUR) (FOR EPSON STYLUS COLOUR 440, 640, 740)	$22.50
EC-21	EPSON S020189 (BLACK) (FOR EPSON STYLUS COLOUR 740)	$19.20
EC-22	EPSON S020193 (COLOUR)	$23.50
CC-03	CANON BCI-21B (BLACK)	$8.90
CC-04	CANON BCI-21C (COLOUR) (FOR CANON BJC4000, BJC4100, BJC4200, BJC4550)	$10.90

NOTE: All prices are RRP, GST inclusive and subject to change without notice.



princo™



Princo CD-RW kits with Burn-Proof technology

The new Princo IDE CD-RW kit include a 32x12x10 drive with "Burn Proof" technology, 50 pieces of 74 minute media, 2 pieces of High Speed CD-RW media and Nero Burning Rom software.

"Burn Proof" technology is the next big thing in CDR recording. What it does is stops the writing laser when a buffer underrun would normally occur, lets the buffer catch up, and then starts writing again!

Princo specialises in thin-film technology and are the only manufacturers of 16X speed recordable CDs. Additionally, Princo's CDR-R discs feature an excellent durable dye recording layer which provides better archival life.

The CD-ReWritable disc is rewritable over 1,000 times and is fully compatible with any CD-RW writers.

IDE: RRP $589 inc.GST

SCSI: RRP $629 inc.GST

Model	RRP Unit price
Princo 74 minute Silver/Blue Media	$0.98
Princo 80 minute Silver/Blue Media	$1.18
Princo 80 minute Digital Audio Media	$2.85
Princo 80 minute ReWritable Media	$3.38
Princo 74 minute HIGH SPEED ReWritable Media	$5.88
Princo 4Gb DVD-R	$35.95
Princo 74 minute Silver/Blue Media 10-disc Spindle	$7.58
Princo 80 minute Silver/Blue Media 10-disc Spindle	$9.33
Princo 74 minute Silver/Blue Media 50-disc Spindle	$35.89
Princo 80 minute Silver/Blue Media 50-disc Spindle	$40.89
Princo 74 minute Digital Audio Mini Disc	$3.35

NOTE: All prices are RRP, GST inclusive and subject to change without notice.

KDS™



AV-7TF 17" KDS Avitron

- 16" viewable area
- True Flat Trinitron CRT
- MPR II Low Emissions
- VESA Timing Compatible
- Power saving management system
- Universal Power Supply 110/220V
- 16 Video Memory modes
- Full 3yrs onsite replacement Warranty
- Windows 95/98 Compatible (VESA, DOC2B, DOC2B+, DOC/CI)
- Horizontal scan frequency 30-70 KHz
- Maximum Resolution 1280 x 1024
- Flicker Free 85Hz Refresh 1024 x 768
- .24 Aperture Grille Pitch
- On Screen Control System

RRP $579 inc.GST

3 Year Replacement Warranty



19" KDS VS-195i (High Resolution Monitor)

- 19" FST (18" viewable)
- Horizontal Scan Frequecy 30-95 KHz
- 1600x1200 Maximum Resolution@75KHz
- 0.26mm Dot Pitch (0.22HDP)
- KDS Advanced Dynamic On-Screen Control System
- Windows ME Ready
- Plug and Play (VESA, DDC2B, DDC213+, DDC/CI)
- Energy Star and TCO" 99 (low radiation)
- Universal Power Supply 100-240V
- PC/MAC Compatible (Mac adapter optional)
- 10 User Programmable Control Functions
- 3 Years Full Warranty
- KDS Advanced Replacement Express Service

RRP $639 inc.GST

Focusing on your needs

Trade/reseller enquiries welcome

Focus Technology International Pty. Ltd.

1B/191 Parramatta Rd, Auburn, NSW 2144, Australia

Telephone: (02) 9648 1588
Facsimile: (02) 9648 1788
Email: focustech@one.net.au

*Sale ends 30th April 2001

RESELLERS ONLY

We believe in pictures. Here are some pictures from our product catalogue. We believe in product ranges. That's why we have the best product range of computer accessories in Australia. We also believe in prices. That's why we'll beat any price.To request our full product catalogue (67 pages), please fax us your details so we can post a catalogue to you. Remember you must be a reseller.


GRAPHIC TABLET

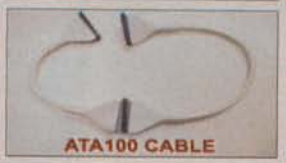

INFRARED JET


MP-3 PLAYER


NOTEBOOK BAG


PCMCIA-USB CARD


ALUMINIUM MOBILE RACK


ATA100 CABLE


BLANK CD


CARD READER


COMPACT FLASH CARD


FIREWIRE/IEEE-1394 CABLE


LVD CABLE


ULTRA DMA ATA/66 CABLE


USB CABLE


USB HUB


USB MOUSE/ USB KEYBOARD


USB HOST ADAPTOR CARD


USB HEADER CARD


USB TO PRINTER ADAPTOR


USB TO SERIAL/MODEM ADAPTOR


BACKUP TAPES


INK REFILLS/ CARTRIDGES


NEW CPU COOLER


TRACKBALL-MOUSE


TIMBER SPEAKERS


USB CAMERA


USB HOST BRIDGE/LAPLINK CABLE

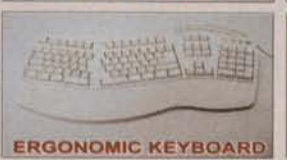

SCSI CABLES


MICROPHONE/ HEADPHONE


CD LABELLING KIT/ SOFTWARE


MULTIMEDIA SPEAKERS


MULTIMEDIA/INTERNET KEYBOARD


ERGONOMIC KEYBOARD


KEYPAD


BARCODE SCANNER


NETWORK CARD/ PCMCIA ADAPTOR


PATCH PANELS


NETWORKING HUB (10/100-DUAL SPEED)


NETWORK BNC/UTP CABLE


SURFACE BOX/ FLUSH PLATE

NETWORKING TOOLS

JOYSTICK /JOYPAD

WIRELESS MOUSE

MOUSE PADS

KVM SERVER SWITCHES

ACTIVE REFRIGERATION CPU COOLERS/ FOR OVERCLOCKING

ULTRA LOW PROFILE HDD COOLER

HDD COOLER

SYSTEM /SCSI COOLER

CPU COOLER

IDE/SCSI ENCLOSURES

MULTIMEDIA STORAGE CASE

ULTRA WIDE SCSI-3 MOBILE RACK

SWITCH BOXES

TOOL KITS

ELSA AUSTRALIA PTY LTD
www.elsa.com.au
No 3, 14 Tennyson Road
Gladesville NSW 2111
TEL: 02-9879 5788
FAX: 02-9879 5388
NSW, ACT, QLD and NT Distributor

AUSTRALIAN PC ACCESSORIES PTY LTD
www.apca.net.au
42 Henderson Road
Rowville VIC 3178
(Off Laser Road)
TEL: 03-9763 8200
FAX: 03-9763 8400
VIC, TAS, SA and WA Distributor

Unit 2, 9 Leeway Court
Osborne Park WA 6017
TEL: 08-9242 8588
FAX: 08-9242 8688

The future is here - now!

Solving your high temperature problems!



Rear fan cools CPU



Twin front fans w/filter



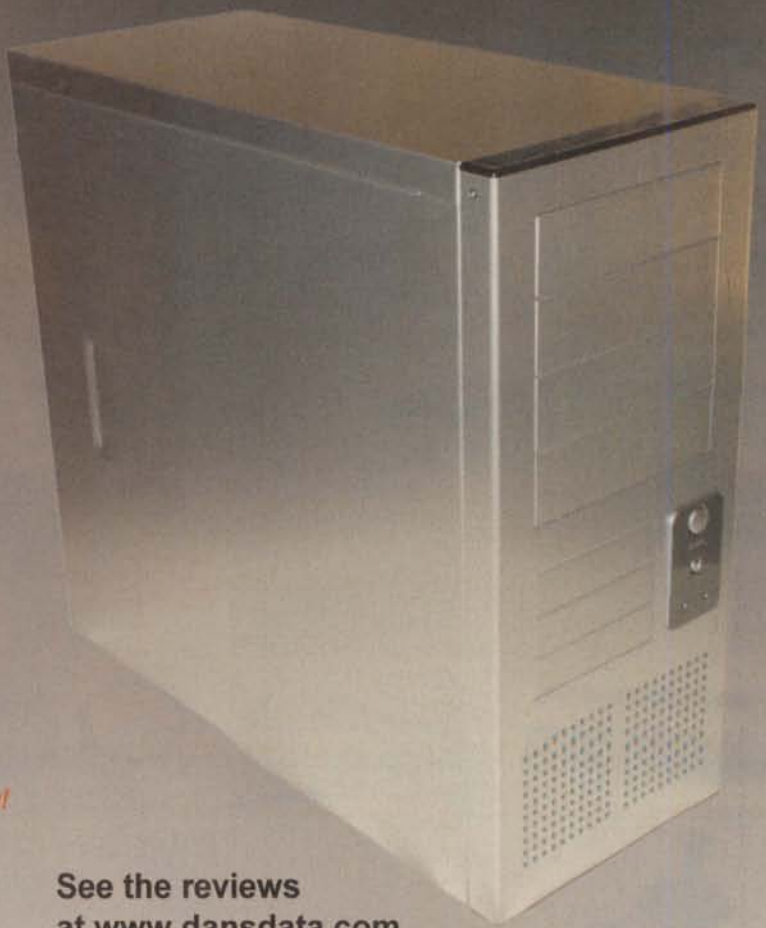
Selectable fan speeds



Twin fans cool your drives



Slide-out tray for motherboard





Thumb screws make easy work of assembly



Detachable Led wiring

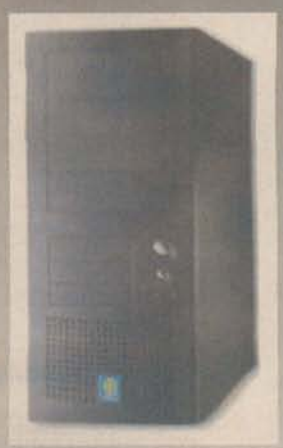


10 bays - Roomy!

Lian-Li Aluminium Cases

See the reviews
at www.dansdata.com
and www.overclockers.com.au

Also available in powder-coated BLACK and BEIGE finishes



Australian Importers & Distributors

NSW, ACT, QLD&NT

Elsa Australia Pty Ltd
3/14 tennyson Rd
Gladesville NSW 2111
Tel: 02 9879 5788
Fax: 02 9879 5388
Web: www.elsa.com.au

VIC, TAS, SA & WA

Australian PC Accessories
42 Henderson Rd
Rowville VIC 3178
Tel: 03 9763 8200
Fax: 03 9763 8400
Web: www.apca.net.au

Available from:

Nationwide retail sales

Aus PC Market
236 Victoria Rd
Gladesville NSW 2111
Tel: 02 9817 8933
Fax: 02 9817 8966
Web: www.auspcmarket.com.au

AUSTRALIA COMPUTER ONLINE

Computer Online Australia
42 Claremont Rd, Burwood Heights NSW 2136
tel: (02) 9747 0001; 9744 6667 fax: (02) 9747 8878 e-mail: pc@computeronline.com.au

Address www.computeronline.com.au Go! Links »

Please check our Web Site for additional products, online ordering and up to date prices, prices include GST and are subject to change without prior notice

Computer Parts and Accessories

CPU's

intel

Celeron 633	$180
Celeron 667	$190
Celeron 700	$195
Celeron 733	$210
Celeron 766	$253
Pentium III 800EB	$420
Pentium III 866EB	$435
Pentium III 933EB	$534
Pentium III 1Gb	$596

AMD

Athlon 600 & fan	$190
Athlon 700 & fan	$250
Athlon 900 & fan	$330
Athlon 950 & fan	$380
Athlon 1Gb & fan	$420
Athlon 1.1Gb & fan	$503
Athlon 1.2Gb & fan	$581
Duron 700 & fan	$140
Duron 750 & fan	$165
Duron 800 & fan	$178
Duron 850 & fan	$230

Hard disks

Western Digital

WD 100AB 10Gb	$190
WD 200EB 20Gb	$220
WD 307AA 30Gb	$255
WD 450AA 40Gb	$315
7200 RPM	
WD 200BB 20GB	$255
WD 300BB 30GB	$308
WD 400BB 40GB	$360
WD 600BB 60GB	$450

Seagate

Barracuda 20GB	$250
Barracuda 30GB	$300
Quantum 20Gb	$250

IBM

Deskstar 30Gb	$320
Deskstar 46Gb	$358
Hitachi	
Notebook 6.4Gb	$285
Notebook 12Gb	$346

Motherboards

Pentium II / III

ASUS CUV-4X	$220
ASUS CUSL2	$310
ASUS CUSL2-c	$260

GIGABYTE

GA-6VXE7+	$155
GA-6VXC7-4X	$175
GA-6VX-4X	$190
GA-6VM7A	$170
GA-6OXM7-E-1	$250

MSI

MSI-6309	$190
MSI-694D Pro Raid	$320

AOpen

AX34	$185

PROTAC

M754LMR	$178
M758LMR	$165
Abit SA6	$250
Abit VP6 Dual cpu	$350

AMD Athlon

Gigabyte 71XE4	$195
Gigabyte 7ZM	$209
Gigabyte 7ZX	$255
ASUS A7V	$310
ABIT KT7	$275
ABIT KT7 Raid	$330
MSI K7T Pro II A	$250

Video cards

4M 3D PCI	$50
4M 3D AGP	$45
8M SIS AGP or PCI	$60
16Mb TNT2 / 32Mb TNT2 AGP	$100 / $110
32Mb TNT2 PCI	$150
32Mb TNT2 with TV out PCI	$165
32Mb TNT2 with TV out AGP	$130
32Mb TNT2 with TV out video in AGP	$180
Matrox G450 32Mb Dual head AGP	$350

ASUS

V7100 GeForce II MX 32Mb with TV out	$250
V7700 GeForce 32Mb Deluxe, DDR	$514
V7700 GeForce 64Mb Deluxe, DDR	$757
V7700 GeForce 64Mb Ultra, DDR	$930
Hercules 3D Prophet II MX 32Mb	$236
Hercules 3D Prophet II MX 32Mb TV out	$280
Hercules 3D Prophet II 64Mb Ultra	$890
Eagle Geforce II MX AGP 32Mb	$190
Leadtek GeForce 256 32MB	$350
Voodoo III 3000 AGP 16Mb TV out	$220
Voodoo III 3000 AGP 16Mb	$200
Voodoo 5 5500 AGP 64Mb	$510

CD Rewriters

Diamond DD10432A 32x10x4 IDE Kit	$300
LG CED-8080B 32x8x4 IDE Kit	$270
Panasonic 7585 32x8x4 IDE Kit	$315
Acer 8432IA 32x8x4 IDE Kit	$267
Aopen RW1232 32x12x10 IDEKit	$385
Sony CRX140E 32x8x4 IDE oem	$270
Sony CRX145E 32x8x4 IDE oem	$300
Sony CRX145S 32x10x4 SCSI oem	$420
Sony CRX160E 32x10x4 IDE oem	$450
Sony CRX160S 32x10x4 SCSI oem	$530
Ricoh MP7063A 32x6x4 IDE Kit	$260
Ricoh MP7083A 32x8x4 IDE Kit	$290
Ricoh MP7120A 32x12x10 IDE Kit	$390
Ricoh MP7125A 32x12x10 IDE Kit	$410
Ricoh MP9060A 24x6x4 DVD CD RW Kit	$490
Ricoh MP9120A 32x12x10 DVD CD RW Kit	$620
Kodak USB external Drive 8x4x4	$480

Printers

EPSON

Stylus 480	$155
Stylus 580	$180
Stylus 680	$280
Stylus 760	$280
Stylus 880	$440
Stylus 900 (12ppm)	$629
Photo 720	$325
Photo 870	$560
Photo 1270 (A3)	$830

Canon

BJC1000SP	$110
BJC 2100SP	$145
BJC 3000SP	$235
BJC 6200	$340
Laser LBP800 (8ppm)	$480

hp

HP 640C	$170
HP 840C	$260
LaserJet 1100 (8ppm)	$700
Panasonic KX6100	$305

Scanners

Artec Ultima 2000	$100

Acer

640U	$130
640P Vuego	$120
640UT Vuego	$245
Canon N340P	$110
Canon N640P	$139
Canon N650U	$169
Canon N1220U	$250
Canon N660U	$255
HP 4300C	$290

Add on cards

Promise U100	$90
Promise U100 RAID	$218
PCI SCSI II card	$50
USB PCI card	$40

Sound Cards

ISA / PCI Sound	$25

Sound Blaster

PCI 128 oem	$45
Live oem	$105

Memory

64Mb SDRAM	$55
128Mb SDRAM	$100
32Mb EDO 72pin	$120

Modems

56K Int	$50
Netcomm 56K Int	$60
56K Ext	$90
56K USB Modem Ext	$90
Netcomm Mega-I	$99
Netcomm Roadster II	
USB or Com Port	$190
U.S Robotics 56K	$180
PCMCIA 56K	$140

Networking

Network card 10Mb	$22
Network card 100Mb	$30
5 Port Hub 10Mb	$50
8 Port Hub 10Mb	$64
5 Port Hub 100Mb	$90
8 Port Hub 100Mb	$120
USB Hub 4 port	$60
Printer Switch 2 in 1	$20

Removable Storage

1.44Mb Floppy	$28
120Mb Floppy	$130
120Mb disk	$18
100Mb Zip Internal	$110
100Mb Zip disk	$17

Cases

ATX Midi case	$55
ATX Full tower case	$110
ATX **Aopen** HX45	$100
ATX **Aopen** HQ 08	$185

Computer Systems - 1 year parts 2 years labour Return to Base warranty

Intel Xerix pro

- 128M SDRAM PC133
- 20GB 7200rpm HDD
- 1.44M Floppy
- 32M TNT2 Video card
- S/B 128 3D Sound card
- 50x CD Rom
- 17" Acer 771 Monitor
- 420 watt Speakers
- Midi Deluxe ATX case
- Acer Win98 Keyboard
- Microsoft IntelliMouse Mouse & Pad

Celeron 633	$1570
Celeron 700	$1620
Celeron 766	$1700
Pentium III 866	$1830
Pentium III 933	$1960
Pentium III 1G	$2060

AMD Astra pro

- 128M SDRAM PC133
- 20GB 7200rpm HDD
- 1.44M Floppy
- 32M Hercules 3D MX
- PCI 3D Sound card
- 50x CD Rom
- 17" Acer 771 Monitor
- 420 watt Speakers
- Midi Deluxe ATX case
- Acer Win98 Keyboard
- Microsoft IntelliMouse Mouse & Pad

Duron 700	$1620
Athlon 600	$1670
Athlon 700	$1840
Athlon 900	$1930
Athlon 1G	$1990
Athlon 1.2G	$2180

Value Series

- 64M SDRAM PC133
- 10GB HDD UDMA 100
- 1.44M Floppy
- 16M Video card built-in
- PCI 3D Sound card built-in
- 56K Modem built-in
- 50x CD Rom
- 15" SVGA Monitor
- 120 watt Speakers
- Midi Deluxe ATX case
- Win98 Keyboard
- A4 Mouse & Pad

Celeron 633	$1050
Celeron 700	$1090
Celeron 766	$1180
Pentium III 866	$1350
Pentium III 933	$1480
Pentium III 1G	$1580

Blank CD

ATERRA	$1.0
TDK/Kodak/Misumi	$1.8
RW **Laser**	$4
RW **Kodak/TDK**	$6

Camera

Logitech express	$95
Quick Cam VC	$165
Vcam Digital	$100
USB Camera	$80

Software

Windows Millennium	$200
Windows 98 2nd edition	$210
Windows 2000 oem-Full	$300
MS WorkSuite 2000 oem	$140
Office 2000 Small busines	$380
MS Office 2000 oem Professional-Full	$500

SYSTEM OPTIONS

Monitors

15" **Acer** 54el	$250
15" **Samsung** 55E	$250
15" **LG** 520Si	$250
15" **Mitsubishi** Diamond	$250
15" **Compaq** with speakers	$270
17" **Targa / KDS**	$360
17" **Acer** 77C	$380
17" **Diamond View** 1770f	$380
17" **LG** 775N	$380
17" **Hitachi** CM615ET	$390
17" **Diamond View** 1772 ie	$470
17" **Sony** CPDE220	$680
19" **LG** 995E	$795
19" **Sony** CPDG400	$1245

Cd Rom / DVD Rom

48x or 50x or 52x CDROM	$80
DVD 12x **Hitachi /Creative**	$180
DVD16x **Pioneer**	$210
DVD 16x **Pana/Diamond**	$220
DVD 16X **Aopen / Acer** kit	$250

Speakers

120W Spks / 480W	$15 / $30
400W Spks mini subwoofer	$40
600W Sub-Woofer SPKs.	$70
980 Watt Sub-Woofer Spks	$90
Creative FPS1000 4 point	$170
Altec Lansing Acs22 / 33	$45/$90

Mouse

A4-tech PS/2 or Serial	$8
A4-tech PS/2 Wheel	$15
A4-tech wireless PS/2	$30
A4-tech Scroll Track	$30

Logitech

PS/2 Mouse	$15
Wheel Mouse PS/2 or USB	$30

Microsoft

Intelligent Mouse PS/2	$30
Intelleye Mouse Optical	$75
Intellimouse Explorer	$90
SAMSUNG Cyber optical	$50

Keyboards

Windows 98 K/B ATor PS/2	$15
Acer K/B AT&PS/2	$20
Multimedia K/B AT	$25
Internet K/B PS/2 or AT	$35
Logitech Internet K/B PS/2	$45
Logitech Cordless iTouch	$140
Honeywell Space mate K/B	$40
HoneyWell Multimedia K/B	$60
MS Internet K/B	$40
MS Natural K/B	$45
MS Internet pro K/B	$67
Wireless K/B with mouse point	$80

Payment and delivery *We accept Cash, Cheque and direct deposit. All orders will be despatched after clearence. We accept Eftpos for in shop purchases. Prices are exclusive of delivery and Insurance*

Business hours: 9:00am-6:00pm Mon-Sat Bank Details: Australia Computer Online Westpac 032062-137324

Visit our new-look Web Site : www.corpsoft.com.au

• Lowest Prices in Australia

Office 2000

- SBE - Upgrade $469
- SBE - New Install* $629
- Std. - Upgrade $469
- Std. - New Install* $629
- Pro. - Upgrade $599
- Pro. - New Install* $759
- Prem.- Upgrade $670
- Prem.- New Install* $830



HURRY limited stocks

** Upgrade bundle with competitive product - limited stocks*

Office 2000 Value Pack



Contains:
• Office 2000 Std • Publisher 2000 • Age of Empires 1 • Encarta 2000 Std • Intellimouse Explorer • Symantec NAV 2001 • Goldmine 5.0 • Intel Easy PC Webcam ... and more

Upg **$629.00** N/Install **$760.00**

NEW FOR 2001:

Eligible for FREE UPGRADE to Office XP Excluding freight

MS Office Pro 2000 Value Pack

Upg **$779.00** N/Install **$925.00**

MS Office Prem. 2000 Value Pack

Upg **$899.00** N/Install **$1045.00**

• New from Macromedia



Dreamweaver
Version 4 - **$659**



FireWorks
Version 4 - **$659**

Call for Upgrade pricing

ABC FlowCharter V7	$295
Adobe Acrobat V4 - New Install	$489
Adobe InDesign **V1.5**	$1429
Adobe PageMaker 6.5 PLUS	$1075
Adobe Photoshop **V6.0** **NEW**	$1310
Arcserve 2000 W/Group Ed	$925

Office 97 Professional

New Install **$530** Upgrade **$430**

Includes: Word, Excel, Access, Powerpoint and Outlook



AutoCAD LT 2000i **New!!!**	$1296
AutoCAD LT 2000i - Upgrade	$375
Borland C++ Build.Pro**V5** - New	$900
Borland J Build.Pro**V4** - New	$800
Borland J Build.Pro**V4** - Upgrade	$428
Borland Delphi Pro V5 - Upgrade	$428
Borland Delphi Pro V5 - New Inst.	$900
Corel W/Perfect Office 2000 **NEW**	$380
Corel W/Perfect Office 2000 Upg	$299
CorelDRAW V9 - New Install	$690
CorelDRAW V10 - New Install*	$850
**Upgrade bundle with competitive product*	
CorelDRAW V10 - Upgrade	$550
Crystal Reports Pro V8	$759
Crystal Reports Pro V8 Upg	$410
Diskeeper V6 for NT Workstation	$109
Diskeeper V6 for NT Server	$528
Drive Image Personal Edition **V4**	$125
Easy CD Creator Deluxe V4.x	$154
Filemaker Pro V5	$420
Lotus Smartsuite Millen. V9.6 Full	$425
Lotus Smartsuite Millen. V9.6 Upg	$309
Macromedia Dreamweaver **4** - **NEW**	$659
Macromedia Fireworks **4** - **NEW**	$659
Macromedia FLASH **V5**	$789
Macromedia Freehand **V9**	$770
Macromedia ***Cashback Special !!!***	
Web Studio – inc. FLASH V5, Dreamworks V4, Fireworks V4 *(after $150 cashback)*	$1390
MS Exchange Server V5.5 **+ Free Upgrade to Exchange 2000**	$2525
MS FrontPage 2000	$190
MS FrontPage 2000 - Upgrade	$99
MS Project 2000	$888
MS Project 2000 - Upgrade	$360
MS Publisher 2000	$159
MS Publisher 2000 - Upgrade	$130
• **SPECIAL** - MS VisualBasic V6 Pro	$969
MS Windows 98 2ndEd New Install	$399
MS Windows 98 2ndEd Upgrade	$199
MS Win 2000 Pro Upgrade (NT)	$279
MS Win 2000 Pro Upgrade (95/98)	$395
MS WinNT Client Licence	$55
MS Works 2001 (V6)	$104
MS Word 97 ***Special Offer***	$348
MS Word 2000 ***Special Offer***	$360
• **SPECIAL** - MS VisualStudio Pro	$1769
• **SPECIAL** - MS VisualStudio Ent	$2700
MYOB Accounting V10	$348
MYOB Plus V10 -inc. Payroll	$495
Norton AntiVirus 2001	$84
Norton SystemWorks 2001 Std *(*after $40 Cashback)*	$120*
Norton Utilities V2 for WinNT	$72
Norton Ghost V6.5 - 10 user	$520

Corporate Software Australia now sell:
• Computer Hardware • Scanners
• Laser Printers • Consumables



Visit our web site at www.corpsoft.com.au for pricing and product information

Norton Ghost 2001 **NEW**	$125
OmniPage Pro V10 - New Install	$630
OrgPublisher Personal	$950
Paintshop Pro V7 - **New Version**	$208
Paintshop Pro V7 - Upgrade	$135
Partition Magic **V6**	$129
PhotoImpact **V6** - **New**	$209
Quark Express V4.1	$3100
QuickBooks **V7.x** **GST Ready!!**	$239
QuickBooks with Payroll V7.x	$459
QuickBooks Pro V7.x	$330
QuickBooks Pro with Payroll **V8**	$680
Seagate B/up **V8.5** - NT/2000	$1225
Seagate B/up **V8.5** - NT/2000 Upg	$649
Seagate B/up **V4.5** Desktop Pro	$195
Smarterm Essentials V9	$360

Office 97 LICENCES

- Office 97 Std N/Install* **$480**
- Office 97 Pro N/Install* **$480**

**Upg bundle with competitive product - While stocks last*



TypeQuick (for Windows)	$89
VET Net Surfer AntiVirus	$87
VISIO Tech 2000 - New Install	$660
VISIO Std 2000 - New Install	$350
WinZIP **V8**	$63

CORPORATE SOFTWARE
AUSTRALIA PTY LIMITED

Unit 1, 28 Victoria St, Smithfield NSW 2164
PO Box 6168, Wetherill Park NSW 2164

Best PRICES and SERVICE in Australia

STOP PRESS – Symantec Cashbacks – everybody qualifies

ADOBE
Acrobat V4
$280 Upgrade
$489 N/Install
$4500 10 user





Visual BASIC PROFESSIONAL Version 6
• SAVE $444 $525
This special offer is for owners of MS Office Pro

Goldmine Version 5.0
RRP $350
$260.00 ea.
Special – Buy 4 Get 1 FREE





ACT 2000
$205.00
Call for multi-user pricing !!!

CorelDRAW Version 10
$550 Upgrade Only
$850 New Installations*
**Upgrade bundle with competitive product*





Paint Shop Pro Version 7
$208.00
Upgrade $135.00

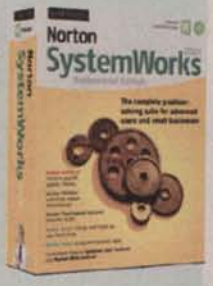
ADOBE
Photoshop Latest Version 6.0
$580 Upgrade
$1310 N/Install





PC Anywhere Version 10
HOST and REMOTE
$235.00

NORTON
SystemWorks 2001
Std $120.00
after $40 cashback
Pro $150.00
after $50 cashback





Norton Ghost 2001
N/Install
$125.00
10 User $520

NORTON
AntiVirus 2001
$84.00 1 User
$149.00 2 User
$269.00 5 User





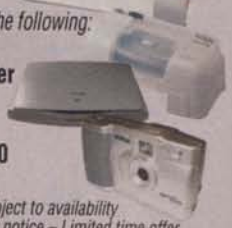
WinFax Pro Version 10
For Win95/98/2000
$106.00

Adobe Special Offer

FREE Scanner or Printer or Digital Camera when you buy Illustrator V9 (Win) for $890



Choose from one of the following:
- Epson Stylus Colour 480 Printer
- Canon N640P Colour Scanner
- Ixla SuperPro 640 Digital Camera



NOTE: Free products subject to availability and may change without notice – Limited time offer

Microsoft CLEARANCES

Windows MILLENIUM EDITION
- Upg from Win98 $110
- Upg from Win95 $175
- New Install $350





Publisher 98
$88.00

IntelliMouse
$50.00
Buy 5 get 1 FREE



PLEASE NOTE: • Delivery: Post $11 or Courier $15.40 • We accept Bankcard Mastercard and VISA, but not AMEX or Diners. COD welcome • Phone, Fax and Mail Orders Welcomed • Goods ordered in error incur a 15% restocking fee • We Accept authorised returns for Credit within 10 days if goods are unopened and in saleable condition • Moneyback *Offers (if any) are the responsibility of the manufacturer • E.& O.E* • All Prices are Subject to Change Without Notice • Images shown are for illustration purposes only • Artwork prepared Mar 6 – prices advertised are GST inclusive. 4/01

We GUARANTEE to beat any genuine competitor's price!!!

Phone (02) 9725 3700 • Fax (02) 9604 1983

NEW TOLL FREE ORDER LINE: 1300 138 333

100% AUSTRALIAN OWNED
Over 14 years in operation

AUSTRALIAN COMPUTER RECYCLERS



WE HAVE MOVED!

... AND YOU CAN STILL FIND THE SAME GREAT DEALS AND PRICES AT OUR NEW LOCATION OF

221 BOUNDARY RD BRAESIDE VIC. 3195

Local Callers 9580 3433 | Country Callers 1800 88 33 11

Website: www.pcrecyclers.net Email: sales@pcrecyclers.net

THE RIN OUT END OF MODEL AND REFURBISHED COMPUTER WAREHOUSE!



ePC

$499 INCL. GST

The Ideal PC for getting on the Net! Use it for reference, homework, email or surfing. This is our all-rounder for the person on a budget!

Includes: • Genuine Intel Pent 133Mhz CPU • 32MB RAM expandable to 256 • 3.5", 1.44 MB Floppy Disk Drive
• 1.2 GB IDE HDD • 16 Bit Stereo Sound & 120W Speakers
• IDE CD ROM Drive • 14" SVGA Colour Monitor
• Keyboard and Mouse • Tested, Boxed and ready to Go!

FREE EXTERNAL MODEM PLUS 100 BIGPOND INTERNET HOURS

Bonus Windows 3.11 CD & Internet Explorer Free! with every e-PC & Platinum Special Pre Installed

UNBELIEVABLE PRICES!

LEXMARK LASER PRINTER

NETWORK READY

Lexmark Optra S1250n, looks, works and prints better than new!

- 12 Pages/Minute
- RJ45 Network Card Interface Pre-installed
- 20MB Memory
- PostScript Level 2
- True 1200 x 1200 dpi
- Universal Paper Trays

$799 incl. GST

i-Vu

USB Digital Camera with view finder for capturing still shots **$129**

SOLA 510 UPS

Sola 510 UPS 600VA with complete voltage protection for your PC or Network!

- 600VA • Frequency 50/60Hz
- Recharge time 8 hours
- 2 X 240V Connection
- Maintenance free battery
- Auto Shutdown Facility
- Critical Protection for Power Failure
- RS232 DB9 Serial Port Comms

$149 incl. GST

17" DIGITAL MONITOR

- 1280 X 1024 Res.
- 17" Picture • Anti Glare
- Digital Controlled
- IBM Model G72
- Low Radiation, MPR II
- Power & Signal Cables Included

$329 incl. GST

OMNI DVD PLAYER - *FREE AREA CODE*

This State of the Art DVD Player is compatible with DVD, SVCD, VCD, DVCD, MP3 and CD as well as MPEG1 and MPEG2 video and audio.

- Remote Control • Latest Innovations in Audio and Video
- Full Karaoke Functions • Slow Motion and Speed play
- Colour Display with Full Functions and Dual Languages
- Bookmarks and Multi-angle Playing

$429 incl. GST

HP NETSERVERS

- 32MB RAM • 3.5", 1.44MB FDD
- 4.1 GB SCSI HDD • HP 4 GB Tape Unit
- IDE CD ROM Drive
- 14" HP Col SVGA Monitor
- 100Mbit RJ45 NIC
- Attractive Minitower Case
- S3 Intergrated Video Card
- Runs NT/Unix/Novell

HP NETSERVER E-30

- Genuine Intel Pentium 166Mhz CPU

$795 incl. GST

HP NETSERVER E-40

- Genuine Intel Pentium Pro 200Mhz CPU

$895 incl. GST

IBM IDEASCAN 2000

These scanners are brand new 4-in-1 scanner, printer, fax and photocopier all rolled into 1 at the press of a button!

- Full Colour Single Pass Scanning
- 9600 X 9600 DPI Enhanced Res
- 600 X 1200 DPI Std
- USB Interface
- Incl. 6 Software Packages
- Requires Windows 98

$199 incl. GST

14" DIGITAL MONITOR

- 1024 X 768 Resolution
- Samsung Tube
- Digital Controlled
- 14" Hewlett Packard
- Anti Glare
- Low Radiation

$129 incl. GST

15" DIGITAL MONITOR

Don't put up with that flickering, fuzzy old VGA monitor when the Hi-Res 15" Digitals are half the price of replacement cost!

- 1024 X 768 Res.
- Samsung Tube
- Digital Controlled
- 15" Samsung 5e
- Anti Glare • Low Radiation

$189 incl. GST

MEMORY

4MB 30Pin Fast Page	$27.00
16MB 30Pin Fast Page	$88.00
4MB 72Pin FP/EDO	$15.00
8MB 72Pin FP/EDO	$33.00
16MB 72Pin FP/EDO	$77.00
32MB 72Pin FP/EDO	$115.00
64MB SDRAM PC/100	$89.00

MULTIMEDIA

16bit Stereo Sound Card	$29.70
16bit Stereo Opti with IDE	$35.00
S/B Vibra 16bit Stereo	$55.00
120W, 240V Speakers	$18.70
Jazz 707 500W Timber Spks	$110.00
Jazz 906 Sub Woofer	$53.90
40X IDE CDROM	$79.00
CD ROM Re-Writer 4X4X32	$320.00
Stereo Desktop Microphone	$4.40

NETWORKING

ISA RJ45 Network Card	$11.00
ISA Combo RJ45/Coax	$16.50
Intel PCI 10/100 RJ45	$42.90
3COM PCI 100 RJ45	$42.90
PCMCIA RJ45 Network Card	$59.00
2MTR RJ45 Network Cable	$22.00
Dual USB PCI Card	$69.00

MAINBOARDS

486 PCI 3/5V upto 100MHz	$49.00
Pentium AT upto 166Mhz	$59.00
Pentium Pro Socket 8-200Mhz	$69.00
Pentium VX upto 200Mhz	$79.00
Pentium TX upto 233MMX	$99.00
Pentium ATX LX upto 333Mhz	$129.00

PROCESSORS

Intel 486 DX4-100 3/5Vlt	$15.00
Intel Pentium 75MHz	$27.00
Intel Pentium 90MHz	$30.00
Intel Pentium 100MHz	$38.00
Intel Pentium 120MHz	$43.00
Intel Pentium 133MHz	$66.00
Intel Pentium 166MHz	$88.00
Intel Pentium 166MMX	$99.00
Intel Pentium 200MMX	$169.00
Intel Pentium Pro200MHz	$169.00
Heatsink & Fan	$13.00

STORAGE HDD/FDD

1.2MB FDD	$11.00
3.5", 1.44FDD	$15.00
1.7GB, 3.5" IDE	$135.50
2.1GB, 3.5" IDE	$165.00
4.3 GB, 3.5" IDE	$198.00
15 GB, 3.5" IDE HDD	$249.00
2.5" to 3.5" HDD Convertor	$29.70

LOGITECH

- iTouch Cordless Keyboard **$88**
- Deluxe Mouseman Wheel Mouse *Serial/USB* **$49**
- Wingman Extreme Gamepad **$44**
- Wingman Attack Joystick **$35**
- SoundMan G1 Hi-Fi Satellite Speakers **$44**
- SoundMan X1 Subwoofer & Speakers **$75**
- Quickcam VC Digital Camera **$99**

DEXXA

- Deluxe Two-Button Mouse **$9**
- Steering Wheel & Pedals **$49**
- 360° Joystick **$29**

MP3/CD WALKMAN

Play CDRs and normal CDs! Complete with earphones and AC adapter **$219**

S3 TRIO VIRGE VIDEO CARD

Version 1.3, PCI 4MB Video Card

SOUND BLASTER

ISA 16 Bit Stereo Sound Card - Original **$55**

1.7GB HARD DISK

Factory refurbished 3.5 IDE 100% OK **$135**

GENUINE INTEL PENTIUM PRO 200

Genuine and very rare CPU still available new, the most powerful fileserver CPU ever built! **$169**

MODEMS

56K V90 Int Fax/Modem	$58.30
56K V90 Ext Fax/Modem	$115.50

VIDEO CARDS

VLB 1MB SVGA	$16.50
VLB 1MB SVGA	$27.50
PCI 1MB SVGA	$27.50
PCI 2MB SVGA	$39.00
PCI 4MB SVGA	$69.00
PCI 8MB Trident 3D	$129.00
PCI 16MB Vanta 3D	$189.00
PCI 32MB TNT2 32MB	$239.00

DIY Pentium Upgrade

UPGRADE THAT TIRED OLD 386/486 PC NOW

Why throw away that old 386/486 when you can upgrade it to a Pentium capable of surfing the Net and running all the applications you currently can't run. other dealers try to sell you a new monster for $1,500 but at ACR you can upgrade from as little as $196.00 and approx. 30 minutes of your time.

DIY PENT 133 UPGRADE

- Pentium AT PCI Mainboard
- Genuine Intel Pent 133 MHz CPU
- 16 MB RAM
- Bonus 1MB PCI Video Card
- Cables and Documentation

$197.00

DIY PENT 166 UPGRADE

- Pentium AT PCI Mainboard
- Genuine Intel Pent 166 MHz CPU
- 32 MB RAM
- Bonus 1MB PCI Video Card
- Cables and Documentation

$259.00

DIY PENT PRO 200 UPGRADE

- Pentium Pro AT PCI Mainboard
- Genuine Intel Pent Pro 200 MHz CPU
- 32 MB RAM / 256 Cache
- Bonus 1MB PCI Video Card
- Cables and Documentation

$299.00

DIY AMD K6/2-500 UPGRADE

- Pentium TX AT PCI Mainboard
- Genuine AMD K6/2-500 MHz CPU
- 32 MB RAM
- Intergrated Video Card and Sound Card
- Cables and Documentation
- Bonus 1MB PCI Video Card

$459.00

33.6K FAX/MODEM

External 33.6K Fax/Modem with AC Adapter and Cable **$69**

3COM 8 PORT RJ45 HUB

Now is your chance to own a genuine 3COM 8 Port RJ45 Network Hub for a fraction of replacement cost. 100% guaranteed and better than new condition. **$89**

ADAPTEC PCI SCSI CONTROLLER

AHA-2940S76 with auto **$99**

2 USER NETWORK PACK

2 x ISA RJ45 Network Cards, Cable and Doco's and your networked! **$42.90**

SOME OTHER SYSTEMS

Every System comes with EXTERNAL MODEM FREE! & 100 Hours Bigpond Internet

Platinum $599 incl. GST

The ideal PC for the person who doesn't want to mess around

- Genuine Intel Pent 166MHz CPU
- 32MB RAM expandable to 256
- 3.5", 1.44 MB Floppy Disk Drive
- 1.2 GB IDE HDD
- 16 Bit Stereo Sound & 120W Speakers
- IDE CD ROM Drive
- 15" SVGA Digital Colour Monitor
- Keyboard and Mouse

G-Force III $699 incl. GST

This is for the person with the lot and plenty of grunt to spare

- Genuine Intel Pent 200MMX CPU
- 32MB RAM expandable to 256
- 3.5", 1.44 MB Floppy Disk Drive
- 1.7 GB IDE HDD
- 16 Bit Stereo Sound & 120W Speakers
- IDE CD ROM Drive
- 15" SVGA Digital Colour Monitor
- Keyboard and Mouse
- Attractive Desktop Case

PowerHouse 400 $859 incl. GST

G-Force's big brother, the V8 of the ACR PC System line-up!

- AMD K6-2 400MHz CPU
- 64MB RAM exp to 256MB
- 3.5", 1.44 MB Floppy Disk Drive
- 2.1 GB IDE Hard Disk Drive
- 16 Bit Stereo Sound Card
- IDE CD ROM Drive
- 15" Digital SVGA Colour Monitor
- Attractive Mini Tower Case

IBM 380ED $1595 incl. GST

NOTEBOOK with Intel Pent MMX technology and the portability to go anywhere

- Genuine Intel Pent 166MMX CPU
- 80MB RAM
- 3.5", 1.44 MB FDD
- 3.0 GB IDE HDD
- Stereo Sound & 120W Speakers
- 20X IDE CD ROM Drive
- 12.1" Active Colour Display
- 33.6 PCMCIA Fax/Modem
- Zoom Video Port Enabled
- Carry Case

WE DELIVER WORLDWIDE

CREDIT CARDS ACCEPTED

YES! WE C.O.D. TO YOUR DOOR

OPEN 6 DAYS A WEEK

STOCKS ARE STRICTLY LIMITED

AUSTRALIA WIDE DELIVERY OF $10 PER BOX OR $20 PER P.C.

ALL ITEMS AND PRICES ARE SUBJECT TO CHANGE WITHOUT PRIOR WARNING - DELIVERY INSURANCE OF $2 PER $100 APPLIES!



CyberLink® PowerVCR II ™ is designed to perform MPEG-1 or MPEG-2 real-time software video recording directly from TV tuners, VCRs, camcorders, DV camcorders, LD Players or PC cameras. It gives you complete control of recording live programs and offers you all the newest advantages of digital video recording such as time shifting, CyberEPG, and pre-schedule recording. Moreover, it features the i-Power, one-click to the PowerVCR II Desktop Protal Page offering you a gamut of resources of digital video recording.PowerVCR II is your ultimate software to record your favorite TV programs or precious home videos and convert them into long-lasting high resolution MPEG-1 or MPEG-2 digital videos.

Also does AVI to MPEG Conversion

Deluxe Version now includes PowerDVD

Supports Win 95, Win 98/SE, Win 2000



HotburnPro Version 2 for 95/98/SE/NT4/2000/Me

The most User Friendly package for CD Recording available
Tired and frustrated by complicated burning packages,
then HotburnPro is the one for you.
Simple and easy to understand interface, with free changeable skins
HotburnPro has nearly all the advanced data and audio features as Nero, but packaged in a much more user friendly environment.
Supports all major SCSI and IDE Burners (Dual Burners supported)
Pro Version Includes HotDisc Designer for CD Covers and Labels
Great for Audio Cd's from Mp3's, WAV, or MS Audio (WMA)

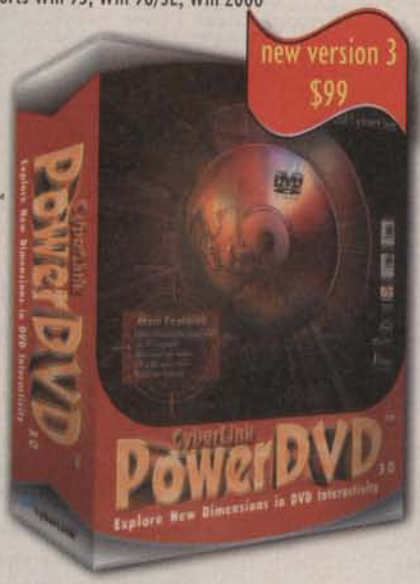
With CyberLink® PowerDVD™ , the world acclaimed software DVD player, you will have the ultimate DVD solution to enjoy all the benefits DVD entertainment has to offer! With its high quality video and audio playback, as well as its low CPU consumption, PowerDVD™ has not only won praise from its growing number of users, but from the industry experts as well. PowerDVD 3.0 has many new exciting features and quality enhancements that are guaranteed to keep it as the number one choice for high quality DVD playback!

Dolby Digital Sound Decoder, Changeable Skins,

Dual Subtitles, Digital Zoom, Enhanced Video Decoder

No hardware decoder card needed!

OS Support: WHQL Certified
Win 95, Win 98/SE, Win NT, Win 2K, Win Me, Linux





Nero 5 CD Burning ROM



Includes InCD packet writing software
Powerful feature set
Supports IDE & SCSI burners up to 12X
Create Audio Cd's from mp3, TwinVQ, MS Audio
Powerful CD copying features
Read copy protected Cd's (PSX) in raw mode
M3U and CD database supported
V5 now supports 2 burners simultaneously
HD or partition image backup direct to CDR
Super VCD & VCD (Video CD) now supported
CD Extra and Mulitisession copying possible
CD Label applicator & Cover editor included
Windows 95, 98, ME, NT4, 2000 supported.

With Cyberlink® VideoLive Mail ™, you can say good-bye to those flat, boring, text e-mails. VideoLive Mail ™ helps to bring out the multimedia powers of your personal computer by letting you send creative, and more effective video mail.

In partnership with a PC camera, users do not only have the ability to capture video and audio files, but also to save them in an advanced, highly compressed format; making them easier to send. These files are saved in a convenient Windows Media Format (WMF), allowing recipients to view e-mail file(s) without the need for additional software.

So whether it is for business or personal use, VideoLive Mail ™ offers an effective way to add impact and meaning your e-mail messages.

For Windows 95 / 98 / NT4 / 2000 / Me



Cyberlink Mediashow 2

A multi-purpose, multi-tasking, and multi-production application, Medi@Show imports a vast array of files from business charts and photo images to audio and video clips into a multimedia slide show. After compiling and assembling, Medi@Show arranges and edits sequences with numerous text effects, fantastic transition effects, cool audio clips, and smashing masking effects to complete your presentation. By integrating such astounding features, the new Medi@Show is the truly the Messiah of Multimedia. Files can be saved as a self packaged compact exe with player inbuilt, scr screen saver, or web streaming multimedia. Incredibly powerful, yet simple to use.

Supports a vast array of image, video and audio formats
Video : AVI, MPG, DAT, MOV
Audio : WAV, MIDI, Audio CD tracks, Mp3
Image : JPG, CMP, TIF, BMP, CO, CUR, PCO, DCX, PCD, DIC, WMF, PSD, PNG, TGA, EPS, RAS, WPG, PCT, CMP Back,
PowerPoint Files



express delivery Australia Wide $10

Labsystems
Software Specialists
CD Recording, DVD, Audio and Video

www.labsystems.com.au
www.hotburn.net
email sales@hotburn.net
tel 03 9885 0888 fax 03 9885 6056

Official Australian Distributors for all products advertised

forté

www.fortecomputers.com.au

SINCE 1987

Buy DIRECT from an established supplier.

PROCESSORS

Intel Celeron 667A (oem) (S370)	$197
Intel Celeron 700A (oem) (S370)	$214
Intel Celeron 733A (oem) (S370)	$230
Intel Celeron 766A (oem) (S370)	$281
Intel Celeron 800A (oem) (S370)	$341
Intel Pentium III-866/133 (S370)	$461
Intel Pentium III-933/133 (S370)	$572
Intel Pentium III-1000/133 (S370)	$621
Intel Pentium 4-1.3GHz	$1,117
Intel Pentium 4-1.4GHz	$1,295
Intel Pentium 4-1.5GHz	$1,822
AMD K6-2 500 3D (oem) (s-7)	$117
AMD K6-3 450+ 3D (oem) (s-7)	$123
AMD Duron 800 (oem) (Socket A)	$185
AMD Duron 850 (oem) (Socket A)	$242
AMD Athlon K7- 900T 3D (oem) (Socket A)	$330
AMD Athlon K7- 950T 3D (oem) (Socket A)	$366
AMD Athlon K7- 1000T 3D (oem) (Socket A)	$425
AMD Athlon K7- 1100T 3D (oem) (Socket A)	$519
AMD Athlon K7- 1200T 3D (oem) (Socket A)	$606

MOTHERBOARDS

Abit SE6 (815, S370, VGA, Audio, U-100, 133)	$290
Abit BX133-RAID (BX, S370, U-100, RAID)	$255
Abit KT7A (VIA, Soc-A)	$317
Abit KT7-100 (VIA, Soc-A, RAID)	$346
Abit KT7-RAID (VIA, Soc-A, U-100 RAID)	$383
Asus CUSI-M (SiS, S370, M-ATX, VGA, LAN, Audio)	$182
Asus CUSL2 (815, S370, U-100, VGA, AGP Pro 4x)	$321
Asus CUSL2-C (815, S370, U-100, AGP Pro 4x)	$269
Asus CUV-4X (VIA, S370, AGP Pro 4x, 133)	$230
Asus CUR-DLS (Server, Dual S370, U-160, 10/100)	$1,616
Asus A7V (VIA, Soc-A, U-100)	$308
Intel BOXD850GR Garibaldi Board for Pentium 4	$578

FDD & STORAGE DEVICES

1.44MB, 3.5" Floppy Disk Drive	$28
LS120 SuperDisk Media	$18
100M Zip Int. IDE (oem)	$117
Iomega 100M Zip Ext. USB	$230
Iomega 250M Zip Int. IDE (oem)	$199
Iomega 250M Zip Ext. USB	$395
ORB 2.2GB Int. IDE Drive (retail)	$331
ORB 2.2GB Int. IDE Drive (oem)	$297
ORB 2.2GB Int.SCSI Drive (oem)	$312

VIDEO & GAMES CARDS

4M Eagle S3 Trio 32/2X AGP VGA Card	$50
8M Eagle Trident AGP VGA Card	$54
16M Eagle TNT2 Vanta AGP	$80
32M Eagle TNT2 Vanta AGP	$107
32M TNT2 M64 AGP w/ TV Out	$133
32M TNT2 M64 PCI	$132
32M Eagle Geforce II MX	$193
32M Asus V7100 GeForce II MX TV Out	$251
32M Asus V7100 GeForce II MX 2VID	$301
32M Asus V7700 GeForce II GTS DDR Pure	$515
32M Asus V7700 GeForce II GTS DDR Deluxe	$482
64M Asus V7700 GeForce II GTS DDR Pure	$645
64M Asus V7700 GeForce II GTS DDR Ultra	$967
32M ATI Rage Fury Pro AGP VIVO (oem)	$255
64M ATI Rage Fury MAXX AGP	$255
32M ATI All-in-Wonder 128 Pro AGP	$496
32M ATI Radeon DDR AGP (oem)	$253
64M ATI Radeon DDR VIVO AGP (Retail)	$841
32M Creative Blaster GeForce PRO DDR	$499
32M Creative Blaster GeForce II GTS	$533
64M Creative Blaster GeForce II Ultra	$908
32M Leadtek Winfast GeForce II MX (oem)	$237
32M Leadtek Winfast Geforce II MX	$282
32M Leadtek Winfast GeForce II GTS TV	$483
64M Leadtek Winfast GeForce II GTS TV	$752
64M Leadtek Winfast GeForce II GTS TV Pro	$853
64M Leadtek Winfast GeForce II GTS TV Ultra	$1,041
32M Millenium G400 Dual Head MAX (retail)	$508
16M Millenium G400 Marvel TV/DVD (retail)	$756
16M Millenium G450 Dual Head DDR 360Mhz (oem)	$265
32M Millenium G450 Dual Head DDR 360Mhz (oem)	$357
32M Voodoo 4 4500 AGP	$329
32M Voodoo 4 4500 PCI	$346
16M Elsa Appian Gemini PCI	$818
32M Elsa Synergy III AGP	$1,302
32MB Hercules 3D Prophet II MX	$245
16M 3Dlabs Oxygen VX1 Glint R3 AGP	$251
32M 3Dlabs Oxygen VX1 Glint R3 PCI	$446
32M 3Dlabs Oxygen VX1 Glint R3 AGP	$446
32M 3Dlabs Oxygen VX1-1600SW PCI (SGI Flat Panel)	$888
32M 3Dlabs Oxy VX1 Ster AGP (CrystalEyes glasses)	$1,068

MONITORS

MONITOR	
Mitsubishi D/view 1554R 15", .24 1024x768	$266
Mitsubishi D/view 1770f 17", .27	$389
Mitsubishi D/view 17NF 17", .25 (Flatron)	$668
Mitsubishi D/view 19NF 19", .25 (Flatron)	$1,126
Mitsubishi D/view 2107 21", .26 1600x1280	$1,769
Acer 54E 15", .28 1024x768 66Hz	$266
Acer 771 17", .27 1280x1024 60Hz	$386
Acer 99C 19", .26 1600x1200 75Hz	$840
Fujitsu 17", 1280x1024 60Hz	$364
KDS 17" Flat Monitor	$588
Auriga ColorPro 19D, 19" .25 (Flatron)	$887
CTX PR705 17", .24 (Flatron)	$596
Hitachi CM615 17", .24 1280x1024	$395
Hitachi CM625 17" (Flat Trinitron)	$658
Hitachi CM715 19", .22 1600x1200	$771
Hitachi CM771 19", .22 1800x1350 (Flat)	$878
Hitachi CM811 21", .22 1600x1280	$1,619
Hitachi CM813 21", .22 1600x1280	$1,770
NEC V720 17" Monitor 1280x1024, 0.28	$480
NEC V920 19" Monitor 1600x1200	$829
Panasonic PF90 19" Digital Color 0.22	$1,082
Sony E220 17", .24-.25 (Flat Trinitron)	$721
Sony G400 19", .24-.25 (Flat Trinitron)	$1,246
Sony G500 21", .24 (Flat Trinitron)	$2,021
Viewsonic E70 17", .27 1280x1024	$385

LCD MONITORS

Acer FP450 14" LCD	$1,441
Acer FP558 15" LCD (Speaker + USB)	$1,860
Acer FP751 17" LCD (Speaker + USB)	$3,560
Acer FP855 18" LCD	$5,564
Hitachi DT3141 14.1" TFT Monitor	$1,725
LG 15" SW570LS LCD Monitor	$1,724
Keycorp 12.1" DSTN Monitor	$899
Keycorp 12.1" TFT Monitor	$1,269
Mitsubishi TFT 15" DV150 1024x768	$1,821
NEC 15" LCD 1510V+ Monitor 1024 x 768	$2,417
Sony 15" SDMM51 TFT Monitor	$2,308
Sony 18" CPDL181 TFT Monitor	$6,032
Viewsonic 15" LCD VE150 1024x768	$1,663

CASINGS

Deluxe Midi Tower ATX 250W	$61
AOpen Midi Tower ATX KF45B	$83
AOpen Full Tower ATX HX08	$193
Intel Chenbro Chassis for Pentium 4	$303
Macase Midi Tower ATX KA-80 250W	$124
Macase Midi Tower ATX KA-80 300W	$138
Macase Full Tower ATX KA-C-80 300W	$248
750 SuperO 300W Slot1/2 Server Chassis	$497
801 SuperO Deluxe Dual PIII/Xeon Chassis	$987
830 SuperO Deluxe Dual PIII/Xeon Chassis	$1,456
5.25" External Case for IDE - USB	$185
5.25" External Case for SCSI-68	$158
2-Bay 5.25" Ext Case for SCSI-50	$186
2-Bay 5.25" Ext Case for SCSI-68	$234

KEYBOARDS 7 MICE

Acer Accufeel Keyboard PS/2	$24
Honeywell Spacemate II Din-S&PS/2	$44
Fujitsu Internet Keyboard PS/2	$37
KeyTronic Designer Keyboard PS/2 (Black)	$45
Logitech Internet Keyboard PS/2 (oem)	$50
Logitech C'less Keyboard + Mouse (oem)	$131
Logitech C'less Freedom Pro (K/b + Mouse) (oem)	$220
Microsoft Internet Keyboard PS/2 (oem)	$48
Microsoft Internet Keyboard Pro (oem)	$77
Microsoft Ergonomic Elite PS/2	$63
Microsoft Natural Keyboard Pro PS/2&USB	$115
Logitech Wheel Mouse PS/2 (oem)	$37
Microsoft Intellimouse PS/2 (oem)	$44
Microsoft Intellimouse Optical USB&PS/2	$84
Microsoft Intellimouse Explorer USB&PS/2 (oem)	$96
Logitech Cordless TrackMan Live	$314

CD ROM & DVD ROM

44x IDE ATAPI CD-ROM Drive	$67
52x Creative IDE CD-ROM Drive	$80
32x Teac SCSI CD-ROM Drive	$164
Pioneer 16x DVD 40xR IDE Bare Drive (OEM)	$199

CD REWITERS

CD REWRITERS	
Plextor (12x10x32) IDE + Soft + Media	$721
Plextor (12x10x32) SCSI + Soft + Media	$888
HP 9140i (8x4x32) IDE	$389
HP 9350i (10x4x32) IDE	$463
HP 9500i (12x8x32) IDE	$556
HP 9600si (12x8x32) SCSI	$710
HP 8230e (4x4x6) Ext USB	$534
HP 9600se (12x8x32) Ext SCSI	$890
Acer (8x4x32) IDE + Soft + Media	$266
Ricoh 7125A (12x10x32) IDE Kit	$400
Ricoh 9120A (12x10x32x8) IDE DVD-CDRW	$581
Sony 145E (10x4x32) IDE Bare Drive (OEM)	$363
Sony 145S (10x4x32) SCSI Bare Drive (OEM)	$427
Sony 160E (12x8x32) IDE Bare Drive (OEM)	$472
Iomega Zip (12x10x32) Int IDE	$505
Iomega Zip (4x4x6) Ext USB	$470
Yamaha (8x4x24) SCSI Bare Drive (OEM)	$391
Yamaha (8x4x24) SCSI + Soft + Media	$445
Yamaha (8x8x24) SCSI + Soft + Media	$489
Yamaha (8x8x24) Ext SCSI + Soft + Media	$583

SOUND CARDS

Eagle 16 bit ESS 1938	$26
Sound Blaster Vibra 128 (oem)	$46
Sound Blaster LIVE (oem)	$113
*Sound Blaster LIVE DE 5.1	$191
Sound Blaster LIVE Platinum 5.1	$449
Diamond Monster Sound MX400 (oem)	$110
Guillemot Maxi Studio ISIS XL	$700

SPEAKERS

Zodiac Subwoofer Premium Stereo Speakers	$45
Altec Lansing ACS22 - 2p	$60
Altec Lansing ACS233 - 3p	$79
Altec Lansing ACS45.1 Power Cube - 3p	$165
Altec Lansing ATP3 Flatpanel -3p (multi-channel)	$215
Altec Lansing ACS56 Gamers -5p Digital in	$265
Altec Lansing ACS48 Power Cube + - 3p	$265
Altec Lansing ADA305 USB Dolby P/L Srnd	$225
Altec Lansing ADA880 Dolby AC3 - 5p	$488
Cambridge PCWorks 3-p	$90
Cambridge FPS1000 4-p Surround	$153
Cambridge FPS1500 4-p Surround Digital	$191
Yamaha YST/20 Digital Surround Speakers	$116
Yamaha YST/M100 Surround Speakers	$210
Yamaha YST/MS30 Subwoofer + Speakers	$125
Yamaha YST/MS35 Sub + Speakers USB	$152

PRINTERS

Acer Fotoprisa 300P	$314
Brother HL-1240 12ppm 2M Laser	$518
Samsung ML-4500 8ppm 600dpi	$431
Canon BJC-1000SP	$120
Canon BJC-2100SP 5ppm	$148
Canon BJC-3000 (+USB)	$239
Canon BJC-6200 8ppm (1440x720)	$350
Canon BJC-8200	$595
Epson Stylus Color 480 (720x720)	$145
Epson Stylus Color 580 (1440x720) (USB)	$178
Epson Stylus Color 680 (2880x720) (+USB)	$266
Epson Stylus Color 880 (2880x720) (+USB)	$500
Epson Stylus Color 980 (2880x720) (+USB)	$700
Epson Stylus Photo 1270 (A3+)	$838
*Lexmark Z11 Colour (1200x1200)	$132
*Lexmark Z31 Colour (1200x1200)	$162
Lexmark Z32 Colour (1200x1200)	$186
Lexmark Z42 Colour (1200x1200)	$279
Lexmark Z52 Colour (1200x1200)	$408
HP DeskJet 640C	$178
HP DeskJet 840C	$271
HP DeskJet 930C	$322
HP DeskJet 950C	$439
HP DeskJet 970Cxi	$708
HP DeskJet 1125C (A3)	$583
HP DeskJet 1220C (A3)	$860
HP DeskJet 2000C	$844
*HP LaserJet 1100 8ppm	$708
HP LaserJet 2100	$1,289
Kyocera FS-1000	$623
Kyocera FS-1200	$1,046
Panasonic KX-P6100	$308
Xerox DocuPrint P8ex 8ppm	$415
Sony Cybershot DSCS70 Digital Camera	$1,881
Diamond Rio 500 64MB	$428
Nomad II MG 64MB + Docking Station	$705
Creative Labs MP3 Jukebox	$927
Hip Zip MP3 Player	$556

TV TUNERS

Dynalink TV Tuner PCI + FM Radio	$120
Hauppauge WinTV USB	$251
Miro Media PCTV PRO	$374
Miro Media PCTV USB	$333

VIDEO CONFERENCE CAMERA

VIDEO CONFERENCE CAMERA	
Creative VB WebCam Go Plus	$301
Kodak DVC-325 Digital Video Camera USB	$157
Logitech QuickCam Express USB (oem)	$90
Logitech QuickCam Pro Parallel	$223
Logitech QuickCam Pro USB	$223

VIDEO CAPRUTE CARDS

Pinnacle Miro Studio DC10 +	$559
Pinnacle Miro Studio DV	$306
Pinnacle Miro Studio DV Plus	$534
Pinnacle Miro Studio MP10	$687
Pinnacle Miro Video DC30 +	$1,557
Pinnacle Miro Video DV500 PRO	$1,701
Pinnacle Miro Video DV200	$1,402
32M Matrox RT2000 Kit	$2,626
Canopus DVRex Premier 5.1	$5,455

CONTROLLER CARDS

Promise U-100 + Cable (oem)	$95
Promise Fastrak-100 IDE RAID Array 0/1	$242

PROVIDING FULLY INTEGRATED COMPUTING SOLUTIONS

- **Hardware & Software**
- **On-site service: Sydney Metro & Australia Wide**
- **Web design & hosting: fully integrated client specific E-commerce packages.**
- **Local Area Network - Wide Area Network- Virtual Private Network (VPN) - Remote Access & Data Management, Citrix Meta Frame 1.8A, Windows 2000 Server**

Gigabyte SAX (ALI, Soc-7, ATX, U-66)	$148
Gigabyte GA-6OMTE (815, S370, VGA, Audio, U-100)	$290
Gigabyte GA-6VXDC7 (VIA, Dual S370)	$268
Gigabyte 6VXE7+ (VIA, S370, U-66)	$158
Gigabyte 6VXC7-4X (VIA, S370, AGP 4x)	$182
Gigabyte GA-6VA7+ (VIA, S370, AT, U-66)	$166
Gigabyte GA-6VX7-1394 (VIA, S370, 3xIEEE-1394)	$264
Gigabyte GA-7ZX-1 (VIA, Soc-A, ATX)	$227
Gigabyte GA-7ZX-R (RAID)	$347
Gigabyte GA-7ZM (VIA, Soc-A, M-ATX, Audio)	$209
MSI 694D Pro (VIA, Dual, S370, Audio, U-100)	$370

MEMORY

64MB PC133 SDRAM 168pin (HY/MT)	$62
128MB PC133 SDRAM 168pin (HY/MT)	$113
256MB PC133 SDRAM 168pin (HY/MT)	$241
512MB PC133 SDRAM 168pin (HY/MT)	$798
64MB PC133 SDRAM 168pin (oem)	$54
128MB PC133 SDRAM 168pin (oem)	$105
256MB PC133 SDRAM 168pin (oem)	$227
Call for the most updated pricing !	$557

Call for the most updated pricing ! Memory for Brand Name Notebook & Desktop, call 1300 368 922

HARD DISKS - IDE

15Gb Seagate Barracuda 2M 7200	$231
30Gb Seagate Barracuda 2M 7200	$319
*30Gb 75GXP IBM Deskstar U-100 2M 7200	$317
*45Gb 75GXP IBM Deskstar U-100 2M 7200	$381
20Gb Quantum FB AS U-100 2M 7200	$246
30Gb Quantum FB AS U-100 2M 7200	$314
20Gb WD Caviar U-100 5400	$244
30 Gb WD Caviar U-100 5400	$257
45 Gb WD Caviar U-100 5400	$368

HARD DISKS - NOTEBOOK

10GB Hitachi 9.5mm	$323
12GB Hitachi 9.5mm	$346
HARD DISKS - SCSI	
9Gb Quantum Atlas V U-160 LVD68	$396
18Gb Quantum Atlas V U-160 LVD68	$602
36Gb Quantum Atlas V LVD68	$939
9Gb Quantum Atlas 10K II U-160 LVD68	$466
18Gb Quantum Atlas 10K II U-160 LVD68	$635
36Gb Quantum Atlas 10K II U-160 LVD68	$1,133
9.2Gb Seagate Barracuda LVD68	$434
18.4Gb Seagate Barracuda U-160 LVD68	$604
36.4Gb Seagate Barracuda U-160 LVD68	$1,697
9.2Gb Seagate Cheetah LVD68 10,000rpm	$504
18.4Gb Seagate Cheetah LVD68 10,000rpm	$668
36.7Gb Seagate Cheetah LVD68 10,000rpm	$1,150
18Gb Seagate Cheetah LVD68 15,000rpm	$959
9Gb IBM Ultrastar 36LZX U-160 10k LVD68	$452
*18Gb IBM Ultrastar 36LZX U-160 10k LVD68	$686
36Gb IBM Ultrastar 36LZX U-160 10k LVD68	$1,180

SCANNERS

Acer 340P EPP (300x600)	$115
Acer 640U USB (600x1200)	$130
Acer ScanPremio ST (1200x2400)	$1,336
Acer ScanWit 2720S Film Scanner	$602
Agfa Snapscan E50 + 35mm Film (1200x2400)	$416
Agfa Duoscan T1200 SCSI (600x1200)	$1,300
Mitsubishi DV648U USB (600X1200)	$131
*Umax Astra 2100U 36-Bit (600x1200)	$113
Canon CanoScan N340P (300x600)	$115
Canon CanoScan N640P (600x1200)	$140
Canon CanoScan N650U USB (600x1200)	$180
Canon CanoScan D660U USB+35mm Film (600x1200)	$279
Canon CanoScan N1220U USB (1200x2400)	$284
Canon CanoScan FB1210U USB (1200x2400)	$441
Epson Perfection 640 USB (600x2400)	$280
Epson Perfection 1240 USB (1200x2400)	$464
Epson Perfection 1640SU SCSI & USB (1600x3200)	$561
Epson Perfection 1640SU Photo SCSI & USB	$725
HP ScanJet 3400C USB	$276
HP ScanJet 5300C USB	$461
HP ScanJet 5370C USB	$588
HP PhotoSmart S20	$840
Plustek OpticPro 1248U (600x1200) USB	$113
Plustek OpticPro U12B (600x1200) USB	$122
Plustek OpticPro UT12 (600x1200) USB	$169
Microtek V6 USL A4 42-Bit USB&SCSI	$375
Microtek 4600 (1200x2400) USB	$401
Microtek X12 USL (1200x2400) USB&SCSI	$584
Microtek Scanmaker 4 SCSI (Trans)	$1,279

MODEMS

56K V90 Fax Modem Internal Web Excel	$56
56K V90 Fax Modem Ext. Topline Dynalink	$100
Banksia WaveSP 56K V90 Desktop Ext. (oem)	$170
Netcomm InModem 56K V90 Int. PCI (oem)	$64
Netcomm Roadster II 56K V90 Ext. USB (oem)	$195
3Com USR FaxModem 56K Ext.	$210
Paradise Wavecom 56K Pro	$180
Dynalink ALE070 USB ADSL Modem	$389
Lightspeed 56K Rockwell PCMCIA Modem	$128

DIGITAL CAMERAS

Umax AstraCam 640x480 4MB USB	$274
Agfa ePhoto CL30 1440x1080 4MB	$673
Canon PowerShot Digital IXUS	$1,097
Canon PowerShot PRO 70 Professional	$1,251
HP PhotoSmart S20	$846
Kodak EZ-200	$250
Kodak DC-3200	$493
Kodak DC-4800	$1,518
Sony Mavica MVCFD85 Digital Camera	$1,398
Sony Mavica MVCFD90 Digital Camera	$1,580
Sony Mavica MVCFD95 Digital Camera	$2,119
Sony Mavica MVCCD1000 Digital Camera	$2,558
Sony Cybershot DSCS30 Digital Camera	$1,088
Adaptec 2904 PCI	$115
Adaptec 2930 U PCI Kit	$221
Adaptec 19160 PCI U-160 1xchnl 32-Bit Kit	$510
Adaptec 29160 U-160 64-Bit PCI Kit	$680
Adaptec 2100S U-160 RAID 1-Channel (Kit)	$976

TAPE BACK-UP

Onstream 30GB Internal IDE Drive	$527
Seagate 20GB TR5 IDE Kit + Backup Exec	$568
Seagate 20GB TR5 SCSI NT/NW + Backup Exec	$1,026
Seagate 8GB TR4 IDE Kit + Backup Exec	$425
Seagate 8GB TR4 SCSI Kit + Backup Exec	$498

NETWORK ADAPTORS

Skymaster 10M Combo PCI	$24
Accton 10/100M PCI (OEM)	$30
D-Link DFE-530TX 10/100M PCI Ethernet	$60
3Com 3C905B 10/100M PCI Ethernet (OEM)	$87
Compex 10/100M PCI Ethernet	$33
Intel 8460B 10/100M PCI Ethernet (oem)	$96
NetGear FA311TX 10/100M PCI (oem)	$45

HUBS

Swann Smart 4-Port Powered Hub	$71
Accton 8-p 10M Hub (oem)	$64
Accton 8-p 10/100M Switching Hub	$238
D-Link 8-Port 10/100 Hub (DES-908DX)	$321
D-Link Print Server 3-Port 10/100M (DP-300)	$321
Intel InBusiness 8-p 10/100M Hub Autosensing	$293
Intel InBusiness 16-p 10/100M Hub Autosensing	$546
Intel InBus 16-p 10/100M Switch (SS10TX16AU)	$960
Intel Express 140T 16-p 10/100M Standalone Hub	$1,003
Intel Express 140T 24-p 10/100M Standalone Hub	$1,332
Intel InBusiness 4-p 10/100M Switch (SS10TX4AU)	$273
Intel Express 410T 16-p 10/100M Standalone Switch	$1,318
Intel Express 410T 24-p 10/100M Standalone Switch	$1,767
Intel NetPort Express 3-Port 10/100M Print Server	$712
Netgear 4-p 10/100M Hub + 2xFA310 + Cables	$259
Netgear 5-p 10/100 Switch + 2xFA310 + Cables	$269
Netgear 8-p 10/100 Dual Speed Hub Ext.	$245
Netgear 16-p 10/100 Dual Speed Hub Ext.	$434
Netgear 8-p 10/100 Dual Speed Hub Int.	$469
Netgear 16-p 10/100 Dual Speed Hub Int.	$660
Netgear PS112 2-p 10/100 Print Server	$269
Netgear 56K Analogue Modem Router	$640
Netgear Router for DSL & Cable Modem 10/100	$325
Netgear Router DSL/Cable + 4-p Switch	$412

POWER PROTECTION (UPS)

SOLA 305/250VA UPS	$180
APC Backup 300 Multipath	$151
APC Backup Pro 280 SI	$278
APC Backup Pro 420 SI	$328
Liebert Powersure ProActive 350VA UPS	$282

Design: Foundry+448FOR/Apr01/PCAPmd



forté

SINCE 1987

ADD an Internal IOMEGA ZIP100 to any system for $100

NEW

NOW with 2 YEAR ON-SITE WARRANTY

forté Lithium III Series*

- Genuine AMD Duron or Thunderbird Processor
- Asus A7V (VIA, Soc-A, U-100) M/Board
- 128Mb SDRAM PC 133
- 45Gb 7200rpm Ultra-100 IDE HDD
- 1.44Mb 3.5" Floppy Disk Drive
- 32M Leadtek GeForce II MX V'Card
- AOpen KF45B 250W ATX Midi Tower Case
- Microsoft Internet PS/2 Keyboard
- Microsoft Intellimouse PS/2
- 16x DVD 40x CD-Rom Drive
- Creative Sound Blaster Live! Soundcard
- Altec Lansing ACS233 Stereo Speakers
- 56K V90 Internal Fax/Data Modem
- Windows 98 / Millennium installed & conf.

Price	
D-800	$2,120
D-850	$2,180
K7-900T	$2,250
K7-1100	$2,450
K7-1200	$2,520

forté Thorium III Server*

- 2x Intel Pentium III 866 Processor
- Gigabyte GA-6VXDC7 Dual CPU Motherboard
- 256Mb SDRAM PC 133
- 18Gb U-160 SCSI LVD68 7200rpm HDD
- 1.44Mb 3.5" Floppy Disk Drive
- 4Mb S3 Trio 32-3D/2X AGP Video Card
- AOpen HQ08 300W Full Tower Case
- Acer 104-Key PS/2 Keyboard
- Microsoft Trekker PS/2 Mouse
- 44x IDE CD-ROM Drive
- 3Com 3C905 10/100 PCI Ethernet
- Tekram 390U2W SCSI PCI Card



Illustration with optional TFT monitor

forté Millenium III Series

- Genuine Intel Pentium III 866 Processor
- ASUS CUSL2-C i815 Chipset U-100 Motherboard
- 128Mb SDRAM PC 133
- 30Gb 7200rpm Ultra-100 IDE HDD
- 1.44Mb 3.5" Floppy Drive
- 32Mb Leadtek Winfast GeForce II MX Video Card
- Hitachi CM 615 17" .24 Monitor
- Deluxe Midi Tower Case
- Logitech Internet PS/2 Keyboard
- Logitech Wheel Mouse PS/2
- Pioneer 16X DVD, 40X CD-Rom Drive
- Creative Sound Blaster Live Soundcard
- Altec Lansing ACS-233 Speakers
- 56K V90 Internal Voice/Fax/Data Modem
- Canon BJC-2100SP Printer
- Canon N640P Scanner
- Logitech Quickcam Express USB
- Windows 98 / Millennium installed & conf.

Thunderbird K7-1000T $2,350 **Dual PIII-866 $2,999** **Intel PIII-866 $2,999**

*ADD A QUALITY HITACHI MONITOR OF YOUR CHOICE TO ANY SYSTEM



CM 615 Value $380†
CM 625 Flat Scr $640†
CM 715 $740†
CM 771 Flat Scr $850†
CM 772 Flat Scr $1,050†
CM 811Value $1,600†
CM 813 $1,800†
Hitachi 15" TFT $1,690†
Hitachi 17" TFT $2,900†

† Special monitor pricing valid for system purchases only.

forté Palladium III Series*

- Genuine Intel Processor
- ASUS CUSI-M Motherboard
- 64Mb SDRAM PC 133
- 10Gb Ultra-100 IDE HDD
- 1.44Mb 3.5" Floppy Drive
- 16Mb Shared On-Board Video
- 250W ATX Midi Tower Case
- 104-Key Windows PS/2 Keyboard
- 2-Button PS/2 Mouse
- 44x IDE CD-ROM Drive
- 16-Bit 3D On-Board Sound
- 180W PMPO Stereo Speakers
- 56K V90 Integrated Modem

PRICES		
	Cel-667	$890
	Cel-700	$910
	Cel-733	$920
	Cel-766	$990
	PIII-866	$1,170

forté Iridium III Series*

- Genuine Intel Processor
- Gigabyte GA-6VXE7+ VIA Chipset M'board
- 64Mb SDRAM PC 133
- 20Gb Ultra-100 IDE HDD
- 1.44Mb 3.5" Floppy Drive
- 8Mb S3 Trio 32-3D/2X AGP Video Card
- 250W ATX Midi Tower Case
- 104-Key Windows PS/2 Keyboard
- 2-Button PS/2 Mouse
- 44x IDE CD-ROM Drive
- Creative Sound Blaster Vibra 128 Soundcard
- 180W PMPO Stereo Speakers
- 56K V90 Internal Fax/Data Modem
- Windows 98 / Millenium installed & conf.

PRICES		
	Cel-667	$1,180
	Cel-733	$1,210
	PIII-866	$1,460
	PIII-933	$1,570
	PIII-1000	$1,650

forté Titanium III Series*

- Genuine AMD Duron or Athlon Processor
- Gigabyte GA-7ZM Motherboard
- 128Mb SDRAM PC 133
- 30Gb Ultra-100 7200rpm IDE HDD
- 1.44Mb 3.5" Floppy Drive
- 32Mb TNT2 Vanta AGP Video Card
- AOpen KF-45B 250W ATX Midi Tower Case
- Logitech Internet Keyboard PS/2
- Microsoft Intellimouse PS/2
- 44x IDE CD-ROM Drive
- Creative Sound Blaster Vibra 128 Soundcard
- Zodiac Sub Woofer Premium Speakers
- 56K V90 Internal Fax/Data Modem
- Windows 98 / Millenium installed & conf.

PRICES		
	Duron-800	$1,530
	Duron-850	$1,590
	A-900	$1,670
	A-1000	$1,760
	A-1100	$1,850

forté Platinum III Series*

- Genuine Intel Processor
- Asus CUSL2-C i815 Chipset U-100 Motherboard
- 128Mb SDRAM PC 133
- 45Gb 7200rpm U-100 IDE Hard Drive
- 1.44Mb 3.5" Floppy Drive
- 32Mb Leadtek Winfast GeForce II MX Video Card
- 250W ATX Midi Tower Case
- Logitech Internet PS/2 Keyboard
- Microsoft Intellimouse PS/2
- 16X DVD, 40X CD-Rom Drive
- Creative Sound Blaster Live! Soundcard
- Altec Lansing ACS233 -3p Stereo Speakers
- 56K V90 Internal Fax/Data Modem
- Windows 98 / Millenium installed & conf.

PRICES		
	Cel-667	$2,040
	Cel-733	$2,070
	PIII-833	$2,310
	PIII-933	$2,420
	PIII-1000	$2,490

For personal configurations, visit our website and select the System Builder

• Terms & Conditions All prices include 10% GST and are subject to our full terms and conditions of sale, a copy of which is available upon request or on our website. Prices are valid until 21st March 2001 and are subject to change without notice. Check our website for updated prices. • Ordering & Payment Ordering can be done by telephone, fax, e-mail or buy direct from our secure web site. We accept Cash, Direct deposit or Bank Cheque. Credit card and EFTPOS transactions may attract a surcharge. Cheques and Direct Deposits need 3 working days clearance. [National Australia Bank, Strathfield, BSB 082 451, Account No: 633 065 162]. • Delivery Under 3kg Australiawide $13.20, Sydney Metro Area up to 20kg $22. Other areas or interstate please call for charges. • Warranty & Returns Forte system sales carry 2 years limited onsite warranty. Third party devices carry manufacturer's warranty. It is the customer's obligation to ensure that the correct goods are ordered. Please obtain an RA number before returning goods. Returned goods must be unopened and well packaged for return within 7 days of receipt, and accompanied by a copy of the invoice. Refunds will be given less a 20% restocking fee. Delivery and insurance costs are to be born by the customer. Picture above is for illustration purposes only. Trademarks & Logos are the property of the respective owners. Errors & omission excepted.

ORDERLINE 1300 368 922

Tel: (02) 9715 2911 • FAX: (02) 9715 1067 • SERVICE: (02) 9715 7399 • ORDER TRACKING: (02) 9744 6177

WEB SITE www.fortecomputers.com.au • EMAIL sales@fortecomputers.com.au

ADDRESS 101-105 Parramatta Rd, Concord, NSW 2137

TRADING HOURS Mon to Fri 9am-6pm, Sat 9am-2pm

BRANCH SHOP R6, 320 Pitt St, Sydney, NSW 2000. TEL: (02) 9267 9494 FAX: (02) 9267 9495 HOURS Mon-Fri 9am-6pm, Sat 9am-1pm

Design foundry-128FOR/Mac01/PCA5yn

www.newreality.com.au

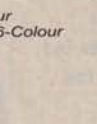
SUPERIOR PERFORMANCE INKJET CARTRIDGES

CLICK IN & $AVE UP TO 60% OFF PRINTING COSTS

CANON COMPATIBLES FROM $6.00

Code	OEM Equivalent	Compatible With:	Price
CC-1BK	BJI-642	BJ-300/330 Black	$12.00
CC-2BK	BJI-201BK	BJC-600/610/620 Black	$6.00
CC-3BK	BJI-643BK	BJC-800/820 Black	$12.00
CC-4BK	BCI-21	BJC-2000/4000/5000 Series Black	$7.00
CC-5CL	BCI-21C	BJC-2000/4000/5000 Series 3-Colour	$12.00
CC-6BKHC	BJI-201BK HC	BJC-600/610/620 HI-Cap Black (14ML)	$9.00
CC-7BK	BCI-10	BJ-30 Black	$9.00
CC-8BK	BCI-11	BJC-70 Black	$9.00
CC-9CL	BCI-11C	BJC-70 3-Colour	$17.00
CC-11CL	BCI-61	BJC-7000 Series 3-Colour	$32.00
CC-12PCL	BCI-62 PHOTO	BJC-7000 Series Photo 6-Colour	$38.00
CC-13B	BCI-3	BJC-6000 Black	$25.00
CC-14C	BCI-3C	BJC-6000 Cyan	$16.00
CC-15M	BCI-3M	BJC-6000 Magenta	$16.00
CC-16Y	BCI-3Y	BJC-6000 Yellow	$16.00
CC-17PBK	BCI-3PBK	BJC-6000 Photo Black	$18.00
CC-18PC	BCI-3PC	BJC-6000 Photo Cyan	$18.00
CC-19PM	BCI-3PM	BJC-6000 Photo Magenta	$18.00

100% COMPATIBLE WITH YOUR CANON PRINTER



BUY 3 GET 1 FREE*

*Free cartridge must be of equal or lesser value than the lowest priced cartridge purchased.



FREE DELIVERY AUSTRALIA WIDE

EPSON COMPATIBLES FROM $17.00

Code	OEM Equivalent	Compatible With:	Price
CE-51BK	SO20025	STYLUS 800/1000 Black	$16.00
CE-52BK	SO20034	STYLUS Colour/Colour Pro Black	$20.00
CE-53CL	SO20028	STYLUS Colour/Colour Pro 3-Colour	$30.00
CE-54BK	SO20047	STYLUS 200/820/Colour II /IIs Black	$13.00
CE-55CL	SO20049	STYLUS 200/820/Colour II /IIs 3-Colour	$21.00
CE-56PBK	SO20093	STYLUS Colour 400/500/600/Photo Black	$17.00
CE-57CL	SO20097	STYLUS Colour 200/500 3-Colour	$23.00
CE-58BK	SO20108	STYLUS Colour 800/850/1520 Black	$17.00
CE-59CL	SO20089	STYLUS Colour 400/600/800/1520 3-Colour	$23.00
CE-60PCL	SO20110	STYLUS Colour 700/Photo/Photo 700 5-Colour	$26.00
CE-61BKCL	SO20138	STYLUS Colour 300 4-Colour	$31.00
CE-65BK	SO20187	STYLUS Colour 440/640/660 Black	$16.00
CE-66BK	SO20189	STYLUS Colour 740/760 Black	$16.00
CE-67CL	SO20191	STYLUS Colour 440/640/660/740/760 3-Colour	$26.00
CE-68PCL	SO20193	STYLUS Photo 750 5-Colour	$33.00
CE-69CL	T003011	STYLUS Colour 900 Black	$19.00
CE-70CL	T005011	STYLUS Colour 900 Colour	$24.00
CE-71PCL	T001011	STYLUS Photo 1200 5-Colour	$29.00
CE-27BK	T007	STYLUS Colour 870/1270 Black	$24.00
CE-73CL	T008	STYLUS Colour 870 Colour	$29.00
CE-74CL	T009	STYLUS Colour 1270 Colour	$34.00

100% COMPATIBLE WITH YOUR EPSON PRINTER



BUY 3 GET 1 FREE*

*Free cartridge must be of equal or lesser value than the lowest priced cartridge purchased.

New Reality's compatible inkjet cartridges will save you up to 60% when compared with the cost of original manufacturers cartridges.

Our cartridges are guaranteed to print as good if not better than the original. Just click them in and $ave!

If you are not 100% satisfied with our cartridges return them and we will refund the full purchase price.....guaranteed!



FREE CATALOGUE WITH EVERY PURCHASE

PAPER & MEDIA

SUPERIOR QUALITY AT AFFORDABLE PRICES



Product Code	Description	Sheets	Price	Price per Sheet
A4HRP	A4 90gsm Hi-Res Paper	100	$ 15.00	0.15
A3HRP	A3 90gsm Hi-Res Paper	100	$ 30.00	0.30
A4WF	A4 White Film 100mu	50	$ 47.00	0.94
A3WF	A3 White Film 100mu	50	$ 90.00	1.80
A4CF	A4 Clear Film 100mu	50	$ 39.00	0.78
A3CF	A3 Clear Film 100mu	50	$ 71.00	1.42
A4FGP	A4 Full Gloss Photo Paper	50	$ 44.00	0.88
A3FGP	A3 Full Gloss Photo Paper	50	$ 79.00	1.58
A4PH	A4 Economy Photo Paper	50	$ 23.00	0.46
AC2	Artists Canvas	25	$ 60.00	2.40
GC4F	Greeting Card (4 Fold)	100	$ 28.00	0.28
GCBF	Greeting Card (Bi-Fold)	100	$ 48.00	0.48
DCCS	Double Coated Card Stock	50	$ 24.00	0.48
GCS	Glossy Card Stock	50	$ 24.00	0.48
TTP	T-Shirt Transfer Paper	15	$ 15.00	1.00
MP	Magnetic Paper	25	$ 58.00	2.32
BC1	Business Cards (10 per A4)	20	$ 19.00	0.95



INCLUDES:
90gsm coated paper, 90gsm hi-res paper, white film, clear film, full gloss photo paper, economy photo paper, greeting card (4 fold), greeting card (bi-fold), glossy card stock, t-shirt transfer paper, business cards and magnetic paper!



New Reality's Media and Paper supplies are guaranteed to be of the highest quality found world-wide and will meet the demands of today's printers including photo realistic output printers! If you are not 100% satisfied with our paper or media supplies return them and we will cheerfully refund the full purchase price.....guaranteed!





AUSTRALIA WIDE FREECALL 1800 680 605

FREE AUSTRALIA WIDE DELIVERY! SAME DAY DISPATCH!!
COD * MONEY ORDER * CHEQUE * MASTERCARD * VISA * BANKCARD * AMEX

Copyright © 2000 New Reality Resources Pty Ltd. All rights reserved.

SUPERIOR PERFORMANCE INKJET REFILL KITS

REFILL & SAVE AT LEAST 80% OFF PRINTING COSTS

BLACK REFILL KITS FROM ONLY $24.90

Black kits include superior, dense & sharp black inks

DESCRIPTION (Kits Compatible with Printers listed below)	No. of Refills	Product Code
CANON BJ-30	60	20-BKL
CANON BJC-70/BJC 80	60	21-BKL
CANON BC-01/02 BJ-10E/20 BJ-200 Series & BJC-1000 Series	9	3-BKL
CANON BJ-300/ 330	7	4-BKL
CANON BJC-600/610/620	16	5-BKL
CANON BJC-2000/4000/4100/4200/4300/4550/5000/5500 BCI-21	45	19-BKL
CANON BJC-2000/4000/4100/4200/4300/4550/5000/5500 BC-20	9	18-BKL
CANON BJC-3000/6000/8000 Series	12	46-BKL
HP Desk Jet 400/500 Series	6	8A-BKL
HP Desk Jet 600/660/690 Series	6	8B-BKL
HP Desk Jet 700/800/900/1000 Series	8	29-BKL
HP Desk Jet 300 Series & Olivetti JP's!	8	7-BKL
EPSON Stylus 400/800/800+/1000	8	1-BKL
EPSON Stylus Colour /PRO/XL	12	2-BKL
EPSON Stylus 820/colour II/IIs	12	23-BKL
EPSON Stylus Colour 200/300/400/500/600/800/850/1520	12	33A-BKL
EPSON Stylus Colour 440/460/480/640/660/700/740/760/900	12	33B-BKL
IBM/LEXMARK 4076/1000/1020/2000/2030/2050 Series	12	35A-BKL
IBM/LEXMARK 5000/5700/7000 & Z Series	12	35B-BKL
CANON, EPSON, HP Fluorescent & Photo Realistic Kits!		Please Call!

COLOUR REFILL KITS FROM ONLY $34.90

Colour kits include cyan, magenta & yellow inks

DESCRIPTION (Kits Compatible with Printers listed below)	No. of Refills	Product Code
CANON BJC-70/80	3x30	22-CLR
CANON BJC-210/210SP/240/255/265/1000 Series	3x12	25-CLR
CANON BJC-600/610/620	3x8	10-CLR
CANON BJC-2000/4000/4100/4200/4300/4550/5000/5500 BCI-21	3x30	17-CLR
CANON BJC-3000/6000/8000 Series	3x8	47-CLR
HP Colour Desk Jet 300/400/500 Series & Olivetti!	3x12	14A-CLR
HP Colour Desk Jet 600C/660C/690C Series	3x12	14B-CLR
HP Desk Jet 850C/855C/870C/1000C Series	3x3	30A-CLR
HP Desk Jet 710/720/890/900 Series	3x3	30B-CLR
EPSON Stylus Colour /PRO/XL	3x4	16-CLR
EPSON Stylus 820/colour II/IIs	3x12	24-CLR
EPSON Stylus Colour 200/300/400/500/600/800/850/1520	3x12	34A-CLR
EPSON Stylus Colour 440/460/480/640/660/700/740/760/900	3x12	34B-CLR
IBM/LEXMARK 4076/1000/1020/2000/2030/2050 Series	3x6	36A-CLR
IBM/LEXMARK 5000/5700/7000 & Z Series	3x6	36B-CLR
CANON, EPSON, HP Fluorescent & Photo Realistic Kits!		Please Call!

Your printer not listed? We stock Australia's largest range of printer consumables. Call now!

USING NEW REALITY'S INKJET REFILL KITS WILL NOT VOID YOUR PRINTER'S WARRANTY.

New Reality Resources has no affiliation with any printer manufacturers or OEM's and nor has any arrangement been made with them to form the basis of any statements we make.



BUY 3 GET 1 FREE

AUSTRALIAN MADE

REUSE RECYCLE REFILL

SATISFACTION 100% GUARANTEED

FREE DELIVERY AUSTRALIA WIDE



FREE CATALOGUE WITH EVERY PURCHASE

FREE DELIVERY AUSTRALIA WIDE!

New Reality
COMPUTER SUPPLIES
New Ideas, New Products.... New Reality

New Reality Resources Pty. Ltd. ACN - 073 908 013 Bayside Business Park
Australia Wide FREECALL - 1800 680 605 Shop 1 / 70 Redland Bay Rd
QLD Phone - (07) 3245 2411 Fax - (07) 3245 2755 Capalaba Q 4157
VIC Phone - (03) 9878 8288 Fax - (03) 9878 3933

Dealers wanted in all states and NZ!
For more information please call.

ALL PRICES INCLUDE GST



AUSTRALIA WIDE FREECALL 1800 680 605

All brand and product names are registered trademarks of their respective owners and used solely for descriptive purposes.

FREE AUSTRALIA WIDE DELIVERY! SAME DAY DISPATCH!!
COD * MONEY ORDER * CHEQUE * MASTERCARD * VISA * BANKCARD * AMEX

S T Y L I S H & I N N O V A T I V E

ÜCLASSIC INTERNET APPLIANCES

Classical chrome styling with built-in extras that will take your breath away

U-Classic
FROM $1699



ÜHOME INTERNET APPLIANCES

Sleek and stylish, chrome finished brilliant and practical

U-Home
FROM $1799



HIGHLANDER SERIES NOTEBOOK

The ultimate notebook, with the power of a desktop

HL 33/63 Series
FROM $2999



HIGHLANDER SERIES NOTEBOOK

The biggest all-in-one in its class, a true power machine

HL 73 Series
FROM $4299



HIGHLANDER SERIES NOTEBOOK

Truly mobile fully featured slim & very light weight at only 2.2KG ... simply irrisistable

HL 342 Series
FROM $3499



The New Range

PC Club AUSTRALIA



Explorer Series Computers
FROM $2099

Super power horse featuring amazing speed, fully packed with complete connectivity

Explorer SERIES COMPUTERS



Enet Systems
FROM $1399

Our elite small system perfect for home & office

ENET SYSTEMS



Lasonic Home Entertainment System
FROM $1299

Lifestyle amplified surround sound system with multizone DVD

LASONIC HOME ENTERTAINMENT



Highlander LCD Computer
FROM $4099

Our latest streamlined all-in-one powerful computer featuring a brilliant LCD flat screen built in DVD

HIGHLANDER LCD COMPUTER

PC Club Australia Pty Ltd
Unit 2a, 17-21 Marquet Street Rhodes NSW 2138
email info@pc-club.com.au

NSW (02) 9736 2688 • QLD (07) 3899 1146

visit us online www.pc-club.com.au

Highlander Series Notebooks, Highlander LCD Computer, Explorer Series Computers, Enet Systems, Lasonic Home Entertainment, U-Home Internet Appliances, and U-Classic Internet Appliances are Trademarks of PC Club Australia Pty Ltd

peripherals plus

making IT work

Duron 750 soho
- AMD Duron 750MHz Processor
- Microstar K7M Pro Motherboard
- Midi Tower Case
- 64MB PC-133 SDRAM
- 20GB ATA-100 5400rpm HDD
- 1.44MB Floppy Disk
- 50x CD ROM
- Integrated 32MB Shared Video
- Integrated AC 97 Audio
- Netcomm 56K PCI Modem
- 15" Samtron 55E Monitor
- 120 Watt Speakers
- Acer K/B & MS Trekker Mouse
- Microsoft Windows ME
- Lotus Smartsuite ME
- PC-Cillin Anti-Virus
- 3 year Nationwide On Site Warranty**

$1499 $66 per month*

Duron 750 value
- AMD Duron 750MHz Processor
- Microstar K7T Turbo Motherboard
- Midi Tower Case
- 64MB PC-133 SDRAM
- 20GB ATA-100 5400rpm HDD
- 1.44MB Floppy Disk
- 50x CD ROM
- nVIDIA TNT2 16MB Vanta AGP Card
- Integrated AC 97 Audio
- Netcomm 56K PCI Modem
- 17" Samsung 750s Monitor
- Altec Lansing ACS-33 3 Piece Speakers
- MS Internet K/B and MS Intellimouse
- Microsoft Windows ME
- Lotus Smartsuite ME
- PC-Cillin Anti-Virus
- 3 year Nationwide On Site Warranty**

$1875 $83 per month*

Athlon 900 gamer
- AMD Athlon 900MHz Processor
- Microstar K7T Turbo Motherboard
- Midi Tower Case
- 128MB PC-133 SDRAM
- 20GB ATA-100 7200rpm HDD
- 1.44MB Floppy Disk
- 16x DVD, 32x8x4 CDRW
- Voodoo-5 5500 64MB AGP Card
- Integrated AC 97 Audio
- Netcomm 56K PCI Modem
- 17" Samsung 750s Monitor
- Altec Lansing ACS-33 3 Piece Speakers
- MS Internet K/B and MS Intellimouse
- Microsoft Windows ME
- Lotus Smartsuite ME
- PC-Cillin Anti-Virus
- 3 year Nationwide On Site Warranty**

$2895 $124 per month*

Athlon 900 plus
- AMD Athlon 900MHz Processor
- Microstar K7T Turbo Motherboard
- Midi Tower Case,
- 128MB PC-133 SDRAM
- 20GB ATA-100 7200rpm HDD
- 16x DVD, 32x12x10 CDRW
- Prophet GeForce 2 MX 32MB Dual VGA
- Integrated AC 97 Audio
- Netcomm 56K PCI, Acer 10/100 NIC
- Dynalink TV + FM Tuner Card
- Logitech Quickcam Express Web Camera
- 17" Samsung 750S Monitor
- Altec Lansing ACS-33 3 Piece Speakers
- MS Internet K/B and MS Intellimouse
- Microsoft Windows ME
- Lotus Smartsuite ME, PC-Cillin Anti-Virus
- 3 year Nationwide On Site Warranty**
- 1.44MB FDD

$2995 $128 per month*

Athlon 1000 soho
- AMD Athlon 1GHz Processor
- Microstar K7T Turbo Motherboard
- Midi Tower Case
- 128MB PC-133 SDRAM
- 20GB ATA-100 7200rpm HDD
- 1.44MB FDD
- Aopen Combo DVD & CDRW Kit
- Prophet GeForce 2 MX 32MB Dual VGA
- Integrated AC 97 Audio
- Netcomm 56K PCI Modem
- 17" Samsung 753DF Monitor
- Altec Lansing ACS-33 3 Piece Speakers
- MS Internet K/B and MS Intellimouse
- Microsoft Windows ME
- Lotus Smartsuite ME
- PC-Cillin Anti-Virus
- 3 year Nationwide On Site Warranty**

$2750 $117 per month*

Athlon 1200 ddr
- AMD Athlon 1.2GHz DDR Processor
- Microstar K7 Master Motherboard
- Midi Tower Case
- 256MB PC-2100 DDR RAM
- 40GB ATA-100 7200rpm HDD
- 1.44MB FDD
- Aopen Combo DVD & CDRW Kit
- Prophet 64MB GTS 2 Ultra AGP Card
- Creative Live DE 5.1 Digital Sound Card
- Netcomm 56K PCI Modem
- 17" Sony CPD-E220 Monitor
- Altec Lansing ACS-54 5 Piece Speakers
- MS Internet K/B and MS Intellimouse
- Microsoft Windows ME
- Lotus Smartsuite ME
- PC-Cillin Anti-Virus
- 3 year Nationwide On Site Warranty**

$4695 $188 per month*

Athlon 1300 ddr
- AMD Athlon 1.3GHz DDR Processor
- Microstar K7 Master Motherboard
- Midi Tower Case
- 256MB PC-2100 DDR RAM
- 40GB ATA-100 7200rpm HDD
- 1.44MB FDD
- Aopen Combo DVD & CDRW Kit
- Prophet GeForce 2 MX 64MB AGP Card
- Creative Live DE 5.1 Digital Sound Card
- Netcomm 56K PCI Modem
- 17" Sony CPD-E220 Monitor
- Altec Lansing ACS-54 5 Piece Speakers
- MS Internet K/B and MS Intellimouse
- Microsoft Windows ME
- Lotus Smartsuite ME, PC-Cillin Anti-Virus
- 3 year Nationwide On Site Warranty**

$4795 $192 per month*

CHECK OUR NEW WEB SITE OR CALL 1800 007 587 FOR OUR LATEST PRICING



Call one of our sales staff or visit our web site for more info.

Tel 02 9630 3166 Fax 02 9630 3167
Unit 4, 1B Kleins Road, Northmead, NSW 2152

www.plus.com.au

Australian Government Endorsed Supplier

All prices include GST and are subject to change without notice. All rights reserved. All other brands and trade marks are the property of their respective owners. All images are for illustrative purposes only. AMD, the AMD logo, AMD Athlon, AMD Duron and combinations thereof are trademarks of Advanced Micro Devices, Inc. *Rental prices are based on a 36 month commercial rental agreement, payable monthly, and excludes extended warranty and insurance. Rental prices include GST, which are subject to confirmation by Flexirent. Rental agreements are subject to Flexirent Trading Terms and Conditions. **On Site Warranty services are provided by Warranty Assistance Australia (WAA) and insurance underwritten by Lumley Insurance Ltd. To confirm coverage in your area, call WAA on 1800 623 394. Errors and omissions excepted. Call one of our sales staff or visit our web site for more info.

Foundry 509PPApril01APC

www.ticomputers.com.au

Trinity International Computers Ph: (02) 9437 5437 Fax: (02) 9437 5468

Shop 5 10-12 Clarke Street Crows Nest NSW 2065 Email: sales@ticomputers.com.au

TI VALUE PACK

Intel Pentium II 700C	$1,099
Intel Pentium III 866	$1,325
Intel Pentium III 933	$1,425
Intel Pentium III 1GB	$1,498
ASUS CUSI-M Motherboard	
Integrade 2D/3D SVGA	
64Mb SD RAM Pc133	
Deluxe Minitower Case ATX	
3.5" FDD Panasonic	
20GB HDD Seagate	
PS II Keyboard & PS II Mouse	
15" Acer Monitor	
50x Acer CD & Speakers	
Integrade 3D Sound Card	
56K Internal Fax Modem	
10/100 Intergrade Network Card	

TI WEEKLY SPECIAL

Pentium II 700 C	$1,148
Pentium III 866	$1,380
Pentium III 933	$1,485
Pentium III 1GB	$1,525
Gigabyte 6VXC7-4X M/B	
64Mb SD RAM PC 133	
20GB Hard Drive Seagate	
3.5" FDD Panasonic	
8Mb S3 AGP SVGA Card	
Deluxe Tower ATX Case	
PS II Keyboard & Mouse	
15" Acer Monitor	
50 Speed Acer CD-ROM	
PCI 3D 4 Channel Sound	
56K Internal Fax Modem	
Amplified Stereo Speakers	

TI DELUXE PACK

Pentium II 700 C	$1,425
Pentium III 866	$1,655
Pentium III 933	$1,755
Pentium III 1GB	$1,799
Gigabyte 6VXC7-4X M/B	
128Mb SD RAM PC 133	
30GB HDD IBM 7200rpm	
3.5" FDD Panasonic	
32Mb RIVA TNT II AGP	
Deluxe Tower ATX Case	
PSII Keyboard & Mouse	
15" Acer Monitor	
50 Speed Acer CD-ROM	
Creative Vb128 Sound Card	
56K Internal Fax Modem	
600W Subwoofer Speakers	

TI BUSINESS PACK

Pentium II 700 C	$1,199
Pentium III 866	$1,425
Pentium III 933	$1,530
Pentium III 1GB	$1,598
Gigabyte 60XE-1 Intel 815	
128Mb SD RAM Pc133	
20GB Hard Drive Seagate	
3.5" FDD Panasonic	
8Mb S3 AGP SVGA	
Deluxe Tower ATX Case	
PS II Keyboard & Mouse	
15" Acer Monitor	
50 Speed Acer CD-ROM	
3D Integrated Sound Card	
56K Internal Fax Modem	
Amplified Stereo Speakers	

TI AMD PACK

AMD Duron 800	$1,550
AMD K7 900	$1,675
AMD K7 1GB	$1,750
AMD K7 1.2GB	$1,920
ASUS A7 Pro Deluxe M/B	
3.5" FDD Panasonic	
128Mb SD RAM Pc133	
30GB IBM 7200rpm HDD	
A-Open Deluxe Tower Case	
15" Acer Monitor	
32Mb RIVA TNT II AGP	
PS II Keyboard & Mouse	
50 Speed CD-ROM Acer	
Creative Vb128 Sound Card	
56K Internal Fax Modem	
600W Subwoofer Speakers	

Notebooks

Compaq - NotebooK	
Presario 1200 P 566 Celeron 64Mb 5Gb 24 x CD 12.1" HPA 56K W98 Software	$1,999
Presario 1200 PIII 650 64Mb 5Gb 24 x CD 13.3" TFT 56K F/M W98 Software	$2,799
Presario 1700 PIII 650 64Mb 10Gb 24 x CD 13.3" TFT 56K 10/100 Ethernet W98	$3,698
Presario 1700 PIII 650 64Mb 12Gb 6 x DVD 14.1" TFT 56K W98	$4,028
Presario 1700 PIII 750 128Mb 20Gb CD-Rewrite 14.1" TFT 56K 10/100 Ethernet W98	$4,465
Presario 1400 PIII 700 128Mb 15Gb 24 x DVD 13.3" TFT 56K 10/100 Ethernet W98	$3,468
Compaq 100a AMD550 5Gb HDD 24 x CD 64Mb RAM 12" TFT Screen 56K F/M W98	$2,468
Armada E500 PII 600 Celeron 64Mb 5Gb 24 x CD 13.3" TFT 56K F/M W98	$3,215
Armada E500 PII 600 Celeron 64Mb 5Gb 24 x CD 13.3" TFT 56K F/M WinNT/2K	$3,399
Armada E500 PIII 650 64Mb 12Gb DVD 14.1" TFT 56K F/M & Ethernet W98	$4,460
Armada E500 PIII 700 64Mb 12Gb 24 x CD 14" TFT 56K F/M & Ethernet W98	$4,250
Armada E500 PIII 700 64Mb 12Gb 24 x CD 14" TFT 56K F/M & Ethernet Win NT/2K	$4,425
Armada E500 PIII 700 64Mb 12Gb DVD 15" TFT 56K F/M 10/100 Ether W98	$5,035
Armada E500 PIII 700 64Mb 12Gb DVD 15" TFT 56K F/M 10/100 Ether W2K	$5,230
Armada E500 PIII 800 64Mb 10Gb 24 x CD 14.1" TFT 56K F/M 10/100 Ether W98	$4,599
Armada E500 PIII 800 64Mb 10Gb DVD 14.1" TFT 56K F/M 10/100 Ether NT4 & W2000	$4,780
Armada E500 PIII 800 128Mb 10Gb 8 x DVD 14.1" TFT 56K F/M 10/100 Ether W98	$5,680
Armada E500 PIII 800 128Mb 10Gb 8 x DVD 14.1" TFT 56K F/M 10/100 Ether W2000	$5,659
Armada E500 PIII 850 128Mb 20Gb DVD 15" TFT 56K F/M 10/100 Ether W98	$6,699
Armada E500 PIII 850 128Mb 20Gb DVD 15" TFT 56K F/M 10/100 Ether NT4 & W2000	$6,895
Armada M300 PIII 600 64Mb 6Gb Ext FDD 12.1" TFT 56K F/M & Ether W98	$4,085
Mobile expansion unit with CD ROM stereo diskett bay	$580
Armada M700 PIII 750 64Mb 12Gb DVD 14.1" TFT 56K & Ether WinNT4/2000	$5,980
Armada M700 PIII 750 64Mb 12Gb DVD 14.1" TFT 56K & Ether W98	$5,645
Toshiba	
Satellite Pro 4310CDT P600Mhz Celeron 64Mb 6Gb 24 x CD 13.3" TFT 56K W98	$2,925
Satellite Pro 4310CDT P600Mhz Celeron 64Mb 6Gb 24 x CD 13.3" TFT 56K W2000/NT	$3,120
Satellite Pro 4330XCDT PIII 650C 64Mb 10Gb 24 x CD 14.1" TFT 56K W98	$3,625
Satellite Pro 4330XCDT PII 650C 64Mb 10Gb 24 x CD 14.1" TFT 56K WinNT & W2K	$3,795
Satellite Pro 4340DXDVD PIII 650Mhz 64Mb 12Gb 6 x DVD 14.1" TFT 56K W2K	$4,160
Satellite Pro 4360DXDVD Intel PIII 700Mhz 64Mb 12Gb 6 x DVD 14.1" TFT 56K W98	$4,299
Satellite Pro 4360DXDVD Intel PIII 700Mhz 64Mb 12Gb 6 x DVD 14.1" TFT 56K W2000/NT	$4,370
Satellite Pro 4380DXDVD PIII 750Mhz 64Mb 12Gb 6 x DVD 14.1" TFT 56K W98	$4,340
Satellite Pro 4380DXDVD PIII 750Mhz 64Mb 12Gb 6 x DVD 14.1" TFT 56K W2000/NT	$4,520
Satellite Pro 4600Pro PIII 650Mhz 64Mb 10Gb 8 x DVD 14.1" TFT 56K W98	$4,228
Satellite Pro 4600Pro PIII 650Mhz 64Mb 10Gb 8 x DVD 14.1" TFT 56K W2K	$4,399
Satellite Pro 4600Pro PIII 700Mhz 128Mb 20Gb 8 x DVD 14.1" TFT 56K W98	$4,645
Satellite Pro 4600Pro PIII 700Mhz 128Mb 20Gb 8 x DVD 14.1" TFT 56K W2K	$4,825
Portege 3480CT PIII 600Mhz 64Mb 12Gb 11.3" TFT 56K F/M W98	$4,360
Portege 7220CT PIII 650Mhz 64Mb 12Gb 56K F/M 13.3" TFT W98	$4,735
Tecra 8100 PIII 600 64Mb 12Gb 6 x DVD 56K F/M 14.1" TFT W98	$4,735
Tecra 8100 PIII 700 128Mb 12Gb 6 x DVD 56K F/M 14.1" TFT W98	$5,835
Tecra 8100 PIII 700 128Mb 18Gb 6 x DVD 56K F/M 14.1" TFT W2000/NT	$6,085
Tecra 8100 PIII 850 128Mb 20Gb 6 x DVD 56K F/M 14.1" TFT W98 CD	$6,699
Tecra 8100 PIII 850 128Mb 20Gb 6 x DVD 56K F/M 14.1" TFT WinNT4/2K	$6,945

Hard Drive - HDD

HDD - IDE Hard Drive	
20GB Seagate or IBM Ultra DMA HDD	$205
20GB Fujitsu 7200rpm 2.0Mb Buffer	$265
30GB IBM 7200rpm ATA100	$308
45GB IBM 7200rpm ATA100	$345
75GB IBM 7200rpm ATA100	$735
Seagate Barracuda 20GB 7200rpm HDD	$245
Seagate Barracuda 30GB 7200rpm HDD	$272
SCSI - HDD	
9GB IBM 10,000rpm Ultra U/160 68 Pin SCSI HDD 4Mb Buffer	$458
18GB IBM 10,000rpm Ultra U/160 68 Pin SCSI HDD 4Mb Buffer	$665
36GB IBM 10,000rpm Ultra U/160 68 Pin SCSI HDD 4Mb Buffer	$1,120
Seagate Cheetah 10,000rpm U/160 9GB 68 Pin SCSI HDD	$490
Seagate Cheetah 10,000rpm U/160 18GB 5.2MS 68 Pin SCSI HDD	$640
Seagate Cheetah 15,000rpm U/160 18GB 5.2MS 68 Pin SCSI HDD	$845
Seagate Cheetah 10,000rpm U/160 36GB 5.2MS 68 Pin SCSI HDD	$1,099
Seagate Cheetah 10,000rpm U/160 73GB 68 Pin SCSI HDD 4Mb Buffer	$1,965
NOTEBOOK - HDD	
FUJITSU 10GB 9.5mm	$310
IBM Travelstar 20GB IDE 9.5mm	$485
IBM Travelstar 30GB IDE 9.5mm	$820

Memory

16Mb 72 Pin EDO RAM	$105
32Mb 72 Pin EDO RAM	$225
64Mb 168 Pin SD RAM PC 133 168 Pin	$55
128Mb 168 Pin SD RAM PC 133 168 Pin	$98
128Mb 168 Pin SD RAM PC 150 Kingmax NEW!!!	$135
256Mb 168 Pin SD RAM PC 133	$240
Memory for notebook (Toshiba, Acer, Compaq etc..) CALL	

CD-ROM/ CD-RW / DVD

CD-ROM / DVD ROM / CD-RW	
50 Speed Acer IDE CD-ROM	$72
ACER 16 Speed DVD Power DVD	$215
CREATIVE 12 Speed DVD with DXR3 Encore Card	$465
RICOH IDE 12 x 10 x 32 Speed CDW-RW retail box	$418
SONY 8 x 4 x 30 Speed CDW-RW OEM	$259
CREATIVE 8 x 4 x 32 CD-RW retail box	$285
IOMEGA Zip external USB 4 x 4 x 6 CDW-RW	$455
YAMAHA CRW8824SVK SCSI CD Writer	$468
YAMAHA CRW8824SX-VK SCSI External	$625

CPU

CPU-INTEL	
Pentium 700 Celeron Intel CPU	$195
Pentiumiii 866E Intel CPU	$419
Pentiumiii 933E Intel CPU	$508
Pentiumiii 1Gb Intel CPU	$560
Sockets to slot convertor	$19
AMD	
AMD K6 II 500Mhz CPU	$115
DURON CPU	
Duron socket A 700Mhz	$138
Duron socket A 750Mhz	$155
Duron socket A 800Mhz	$180
Athoin Thunderbird	
AMD K7 800Mhz CPU	$245
AMD K7 850Mhz CPU	$255
AMD K7 900Mhz CPU	$315
AMD K7 1Gb CPU	$399
AMD K7 1.2G CPU	$556
CPU fan for AMD	$26

MotherBoards

GA 60XE-1 Motherboard Intel 815 Chipset Socket 370	$215
GA 60XE Motherboard Intel 815 Chipset Socket 370	$238
GA 6VXC7-4X Via Chipset Socket 370 Support AGP 4	$160
GA 6VXB-4X Via Chipset Socket 370 Support AGP 4	$185
GA VXDC7 Via Chipset Dual Socket 370 IDE Motherboard	$245
GA VX7-1394 Via Chipset Motherboard with Fire wire 1394	$225
GA 7ZX-1 AMD Motherboard	$235
ASUS MOTHERBOARDS	
ASUS A7V Motherboard for AMD	$289
ASUS A7Pro Motherboard for AMD	$265
ASUS CUR-DLS Dual SCSI Motherboard with 10/100 Network Card	$1,499
ASUSTEK CUV4X Via Pc133 Motherboard	$230
ASUSTEK CUSL2 Intel Chipset Motherboard AIA 100	$320
ASUSTEK CUSL2-C Intel 815 Chipset Motherboard No SVGA	$249
ASUSTEK CUSL2-M Intel 815 Chipset Motherboard SVGA & Sound & 3Com NIC	$175
ABIT MOTHERBOARDS	
ABIT Via Vas Motherboard Slots 1	$155
ABIT Bs Intel 815 Socket 370 4 x AGP AIA 66/133Mhz FSB Motherboard	$242
ABIT Se6 Intel 815 Socket 370 4 x AGP AIA 100/133Mhz FSB Motherboard	$250
ABIT KT7A Via Socket A ATX 1 AGP 6 PCI 1 ISA 4 DIMM M/B AIA100	$288
ABIT KT7A-100 Via Socket A ATX 1 AGP 6PCI 1 ISA 4 DIMM Motherboard AIA100	$338
INTEL MOTHERBOARDS	
INTEL Motherboard Intel 815EPEA with Sound	$235
INTEL Motherboard Intel 815EEAAL with SVGA Sound Intel 10/100 Network Card	$309

Video Cards

8MB SIS PCI SVGA Card	$65
8MB S3 AGP SVGA Card	$59
MATROX G450 32Mb Dual Head DDRTV Out	$348
MATRAX G450 16Mb Dual Head DDR	$225
32MB MATROX G400 SDRAM 300Mhz	$285
32MB MATROX G400 Dual Head MAX SGRAM	$475
MARVEL G400 16Mb SGRAM 300Mhz	$698
16MB Power Colour RIVA TNT II M64 AGP SVGA	$99
32MB Power Colour RIVA TNT II M64 AGP SVGA	$115
32MB Power Colour RIVA TNT II M64 AGP with TV Out	$135
ASUS V7700 Geforce II 64Mb DDR Pure AGP	$709
ASUS V7700 Geforce II 64Mb DDR TV/TV-Tuner AGP	$815
ASUS V7700 Geforce II 64Mb DDR ULTRA AGP	$968
ASUS V7700 Geforce II 32Mb DDR Deluxe AGP	$475
ASUS V7100 Geforce 32Mb GTS MX with TV Out AGP	$285
LEADTEK 64Mb Geforce II DDR AGP SVGA	$699
LEADTEK 32Mb Geforce II DDR with TV Out	$485
LEADTEK 32Mb Geforce DDR RAM	$325
LEADTEK 32Mb Geforce II GTS II	$455
LEADTEK 64Mb Geforce II GTS II standard	$635
LEADTEK 64Mb Geforce II GTS II Pro	$758
LEADTEK 64Mb Geforce II GTS II Ultra	$915
LEADTEK 32Mb Geforce II MX SD RAM with TV Out	$259
LEADTEK 32Mb Geforce II MX SD RAM OEM	$225
LEADTEK 32Mb Geforce II MX Dual Head SD RAM	$320
3D Labs	
OXYGEN 32Mb Vx1 Glint R3 AGP NEW!!!	$445
OXYGEN 32Mb GvX1 Glint R3 AGP NEW!!!	$1,175
OXYGEN 64Mb GVX1 PRO Glint R4 AGP NEW!!!	$1,945

Soundcards

Audio excel PCI 3D Sound Card 4 Channel & 24Bit SPDIF	$26
Creative VB 128 PCI Sound Card	$39
Creative Soundblaster Live value OEM PCI Sound card	$105
Creative Soundblaster Live Digital Entertainment 5.1 NEW!!!	$179
Creative Soundblaster Live Optical Platinum SC	$409

Monitors

ACER 15" Acerview 1554e 0.28dpi	$255
ACER 17" Acerview 77C 0.27dpi	$355
ACER 19" Acerview 99C 0.26dpi	$815
ACER 14" LCD Monitor with Speaker	$1,299
ACER 15" LCD Monitor with Speaker	$1,599
MITSUBISHI 15" DiView 1554 0.28dpi	$262
MITSUBISHI 17" DiView 1770 0.28dpi	$375
MITSUBISHI 17" DiView 1772 0.26dpi	$468
MITSUBISHI 19" DiView 1795 0.26dpi	$725
MITSUBISHI 19" DiView DV19NF Flatron	$1,045
MITSUBISHI 21" DiView 2107 0.26dpi	$1,598
MITSUBISHI 15" DiView Dv150 LCD	$1,799
SAMSUNG 15" SyncMaster 550S	$255
SAMSUNG 17" SyncMaster 750S	$385
SAMSUNG 17" SyncMaster 750MS	$469
SAMSUNG 19" SyncMaster 950P	$965
SAMSUNG 21" SyncMaster 1100P	$1,625
SAMSUNG 15" 570S LCD 15"	$1,825
SONY 17" E200 0.24dpi Flat	$675
SONY 19" G400 0.24dpi Flat	$1,215
SONY 21" G500 0.24dpi Flat	$1,995
SONY SD-M151 15" Flat Screen LCD	$2,065

Printers

HP 640 Colour	$169
HP 840 Colour Printer USB & Parallel Laser Quality	$269
HP 930 9ppm Black 7.5ppm Colour	$298
HP 1100 Laserjet Printer 8ppm 600dpi	$689
HP 2100 Laserjet Printer True 1200dpi	$1,225
HP 4050 Laserjet Printer 8Mb RAM 2 Paper Trays	$1,969
HP 4050N Laserjet Printer 8Mb RAM 2 Paper Trays Network	$2,459
HP 4500 Colour Laser Printer	
CANON BJC 50 Portable Printer 900gsm	$550
CANON BJC 85 Portable Printer	$335
CANON BJC 1000 Colour Printer	$115
CANON BJC 2100SP Colour Printer	$145
CANON BJC 3000 Colour	$235
CANON BJC 8200 1200dpi Parallel & USB	$572
CANON BJC 6500 A3 Colour Printer	$579
CANON LBP 800 Laser Printer 600dpi 8ppm	$469
EPSON 480 Printer 720 x 720 dpi	$155
EPSON 580 Printer 1440 x 720 dpi USB NEW!!!	$216
EPSON 680 Printer 2880 x 720 dpi USB & Parallel	$294
EPSON 870 Printer 1440 x 720 dpi	$568
EPSON Photo 1270 A3 1440 x 720 dpi	$814
EPSON Stylus 3000 1440 x 720 dpi A2	$1,899
EPSON Lx300 9 Pin Dot Matrix Printer	$210
EPSON Lq300 24 Pin Dot Matrix Printer	$335

Scanners

ARTEC Ultima 2000 1200dpi USB Scanner	$99
HP 3300 600 x 1200dpi USB Scanner	$185
HP 4300 600dpi USB & Parallel Scanner	$270
HP 5300 Scanner 600dpi	$445
HP 5370 Scanner 1200dpi	$559
HP 6300 1200dpi 36Bit Colour USB & SCSI	$658
CANON N640P 600 x 1200dpi Parallel 36Bit	$139
CANON N650U 600 x 1200dpi USB 42Bit	$168
CANON N1220U 2400 x 1200dpi USB	$258

Fax / Modem

56K Web Excel Internal F/M	$39
56K Web Excel External F/M	$83
56K Netcom Roadster External Serial F/M	$179
56K Netcom Roadster External USB F/M	$179
56K Netcruiser USB F/M V90	$85
56K PCMCIA Kingmax F/M	$128
NETWORK CARDS	
ACER 10/100 PCI Network Card	$26
DLINK 10/100 PCI Network Card	$55
3 Com Etherlink XL 10/100 PCI Network Card	$108
INTEL Ether Express 10/100 PCI Network Card	$95
PCMCIA 10/100 Network Card Kingmax Real Port	$99

Hub / Switch / PCI - SCSI Controller Cards

ACER 8 Port 10 Mbps Ethernet Hub with BNC	$68
ACER 8 Port 100 Mbps Ethernet Hub	$140
NETGEAR 8 Port 10/100 Dual Speed Hub Ds108	$199
NETGEAR 16 Port 10/100 Dual Speed Hub Ds116	$380
NETGEAR 8 Port 10/100 Hub Ds508 Rackmount Internal Power Supply	$415
NETGEAR 16 Port 10/100 Hub Ds516 Rackmount Internal Power Supply	$590
NETGEAR 24 Port 10/100 Hub Ds524 Rackmount Internal Power Supply	$776
SWITCH	
SKYLINK 8 Port 10/100 Switch	$150
NETGEAR 5 Port Switch External Power Supply	$199
NETGEAR 8 Port Switch External Power Supply	$265
NETGEAR 8 Port Switch Internal Power Supply Rack M	$470
NETGEAR 16 Port Switch External Fs116 Power Supply	$485
NETGEAR 16 Port Switch Internal Power Fs516 Supply Rack M	$845
NETGEAR 24 Port Switch Internal Switch Fs524 Supply Rack M	$955
PRINTER SERVER	
NETGEAR Ps105	$212
NETGEAR Ps110	$249
PCI - SCSI CONTROLLER CARDS	
ADAPTEC ASC 19160 32Bit PCI U160 Channel Card	$345
ADAPTEC ASC 19160 32Bit PCI U160 Channel Card Kit	$485
ADAPTEC ASC 29160 64Bit PCI U160 Channel Card	$549
ADAPTEC ASC 29160 64Bit PCI U160 1 Channel Card Kit	$565
ADAPTEC ASC 39160 64Bit PCI U160 Dual Channel Card	$630
ADAPTEC ASC 39160 64Bit PCI U160 Dual Channel Card Kit	$739
ASUS PCI 896 Dual Channel Ultra Wide SCSI Card	$349

Microtech Corporation Pty Ltd

TechBuy

www.techbuy.com.au

Your online computer store, with more!

Senator

The Versatile Computer.
Power for Business, Home and Gamers.

- Quality midi tower dual fan case
- Genuine Intel 815EEA mainboard
- 128Mb - 133Mhz SDRAM
- 20Gb Ultra DMA hard drive
- LG 775N 17" SVGA monitor
- 32Mb TNT2 M64 AGP graphics card
- 48x LG CD drive
- 56k internal modem
- Soundblaster 128 intergrated
- Altec Lansing ACS22 speakers
- MS Internet Keyboard
- MS Intellimouse and mat
- Win 98SE/ME + Lotus Smartsuite Mil

Pentium III 800	- $2243
Pentium III 866	- $2287
Pentium III 933	- $2399
Pentium III 1GHz	- $2488

Printers

Epson Stylus Colour 480	- $157	Brother Laser 1240	- $551
Epson Stylus Colour 680	- $311	Brother Laser 1270N	- $930
Epson Stylus Photo 720	- $405	Brother Laser MFC-8600	- $1447
Canon BJC2100SP Printer	- $145	Lexmark Optra E312	- $566
Canon BJC3000 Printer	- $245	Lexmark Laser T610	- $1704
Canon BJC4650 Printer	- $396	Xerox Laser P8EX	- $498
HP DeskJet 640C	- $189	Kyocera Laser FS-1000	- $627
HP DeskJet 840C	- $281	Panasonic KX-P6100	- $390
HP DeskJet 930C Photo	- $361	OKIPAGE Laser 10ex	- $653
HP LaserJet 1100	- $699	OKIPAGE Laser 20+E	- $2195
HP LaserJet 2100	- $1320	OKI Microline ML184T	- $411

Calais

Home Computer.
Small Business Workstation.

- ATX midi tower case
- ATX mainboard
- 64Mb SDRAM
- 10Gb Ultra DMA hard drive
- LG 15" SVGA monitor
- Intergrated 3D graphics card
- 48x LG CD drive
- 56k internal fax modem
- 128bit sound built in
- Speakers
- Windows keyboard + MS Mouse
- Win 98SE/ME + Lotus Smartsuite Mil

Pentium II Celeron 667	- $1448
Pentium II Celeron 700	- $1478
Pentium II Celeron 733	- $1499
Pentium II Celeron 766	- $1584
Pentium II Celeron 800	- $1633

Peripherals

CD-RW	
Mitsubishi 32x10x4 IDE CDRW Kit	- $341
Yamaha 24x8x8 IDE CDRW Kit	- $407
LG 32x8x4 IDE CDRW Kit	- $327
LG 12x DVD Kit	- $193
Ricoh 32x12x10 CDRW & 8x DVD Kit	- $599
Ricoh 32x12x10 CDRW Kit	- $434
Monitors	
NEC 17" V720	- $431
Philips 17" 107S	- $399
Mitsubishi 17" 1770F	- $388
Sony 17" CPD-E200	- $676
LG 17" 795FT	- $695
LG 17" 775N	- $375
NEC 19" V920	- $748
Philips 19" 1095	- $825
NEC Multisync 15" LCD1525V	- $1875
Scanners	
Canon N640P	- $134
Canon N650U	- $169
Canon N1220U	- $267
Video Cards	
3D Prophet II Ultra 64Mb	- $957
3D Prophet II GTS 32Mb	- $617
3D Prophet II Dual 32Mb	- $317
3D Prophet II MX 32 Mb	- $259
Hard Drives	
Seagate 10.2Gb	- $209
Seagate 20Gb	- $220
Seagate 20Gb 7200rpm	- $237
IBM 30Gb 7200rpm	- $339
IBM 45Gb 7200rpm	- $389
Processors	
Pentium III 800EB	- $435
Pentium III 866	- $443
Pentium III 933	- $541
Pentium III 1000	- $625

Visit ou Website at www.techbuy.com.au or
Call for our full range of peripherals

Add Quicken Cash Book for just $55.00 (GST Ready)
OR add Quickbooks Version 7 for just $95.00 (GST Ready)

Microtech Computer Systems are available under NSW Government Contract ITS2000

Microtech Corporation Pty Ltd

Established 1991 ABN 15 051 723 123
Unit 5, 10 Newton Street South, Auburn, NSW 2144 Ph: (02) 9648 1818
E-mail : sales@techbuy.com.au Web : www.techbuy.com.au

ALL PRICES INCLUDE GST
We ship Australia wide
Prices do not include freight & insurance. E&OE
Capital City Australia Wide $12.00 5Kg

We accept Bankcard, Visa, Mastercard, Amex & Dinerselub
Prices are subject to change without notice
On-site parking
Delivery Sydney metro $8.00 to 25Kg

Go For ...

LASER GOLD



QUALITY...

Kodak GOLD



STABILITY...

MITSUI GOLD



RELIABILITY

Spindles of 25, 50 or 100 or Individual Jewel Cases

ONLY AVAILABLE AT...

NASA TECHNOLOGY

www.nasa.com.au

Tel: 02-9699-8888 Fax: 02-9699-5188

Unit 7, 119-133 McEvoy St Alexandria, NSW 2015 email: sales@nasa.com.au

NASA TECHNOLOGY



AVAILABLE FROM

NASA TECHNOLOGY

www.nasa.com.au

Tel: 02-9699-8888 Fax: 02-9699-5188

Unit 7, 119-133 McEvoy St Alexandria, NSW 2015 email: sales@nasa.com.au

NASA TECHNOLOGY

MITSUI CHEMICALS, INC.

THE BEST PROVEN PERFORMANCE MEDIA

{MITSUI GOLD GD-74} THE NEXT GENERATION CD-R

CD-R



High Durability and High Speed recording Performance

Proudly Distributed by:

NASA TECHNOLOGY
www.nasa.com.au
Tel: 02-9699-8888 Fax: 02-9699-5188
Unit 7, 119-133 McEvoy St Alexandria, NSW 2015 email: sales@nasa.com.au

PRETEC

Present · Your · Digital · Dreams

MP-Fun

BLUEWAY



Pretec DC-530

- 4-in-1 Digital Camera, PC Camera, Mp3 Player & Voice Recorder
- Includes 32MB CF Card, Tripod Stand, Camera Pouch & Earphones
- Image Resolution of 640 x 480 Pixels, with 2MB Onboard Memory
- LCD Display, Built-in Flash, Video Output & USB Support
- R.R.P. $549.00

Pretec DC-305

- 2-in-1 Digital Camera & PC Camera with Continuous Shooting
- Pocket Size & Light Weight Camera Design
- Image Resolution of 320 x 240 Pixels, with 2MB Memory
- Small LCD Display, 10 Sec Self Timer & USB Supported
- R.R.P. $129.00





Dolby Digital 5.1CH Home Theatre

- Speaker Power Output of 5W x 5 + 15W
- Easy and Flexible Speaker Mode
- Built-in High Performance DSP, Digital & Analog Converters
- R.R.P. TBA

MP-Fun PUM-2000

- 3-in-1 Mp3 Player, Digital Voice Recorder & SM Card Reader/Writer
- 32MB On Board Memory, 32MB SM Card Memory Also Available
- USB Support, Includes 2 x AAA Batteries, Earphones & Belt Buckle
- R.R.P. $349.00 (PUM-2000)
- R.R.P. $170.00 (Smart Media Card)



New Product

3 in 1 Portable Disc Player (MP3/VCD/CD Playback)
Built-in Remote Control Function
Built-in Re-chargable Lithium Battery
Complete LCD Display Function
Bass Booster Control for Mega-Bass Output
OSD Function
Excellent Quality of Audio and Video Output.
Anti-Shock
Hold Function

Dealer Enquiries Welcome

For More Information Call 1800 012 015

or visit **http://www.blueway.com.au**

COMPANIES INSIDE

Altima Computers	ESPCO	Multipli CD	Performance Memory	Server 101
CD Rom Services	Gillins	New Reality Resources	Performance Networking	Stroudco
	Independent Software	Parallel Solutions & Distribution	Rite Price	VME Systems
	I Store	Pelham	SB Computers	

SUPERIOR PERFORMANCE

INKJET REFILL KITS

REFILL & SAVE AT LEAST 80% OFF PRINTING COSTS

www.newreality.com.au

BLACK REFILL KITS FROM ONLY $24.90

Black kits include superior, dense & sharp black inks!

DESCRIPTION (Kits Compatible with Printers listed below)	No. of Refills	Product Code
CANON BJ-30	60	20-BKL
CANON BJC-70/BJC 80	60	21-BKL
CANON BC-01/02 BJ-10E/20 BJ-200 Series & BJC-1000 Series	9	3-BKL
CANON BJ-300/ 330	7	4-BKL
CANON BJC-600/610/620	16	5-BKL
CANON BJC-2000/4000/4100/4200/4300/4550/5000/5500 BCI-21	45	19-BKL
CANON BJC-2000/4000/4100/4200/4300/4550/5000/5500 BC-20	9	18-BKL
CANON BJC-3000/6000/8000 Series	12	46-BKL
HP Desk Jet 400/500 Series	6	8A-BKL
HP Desk Jet 600/660/690 Series	6	8B-BKL
HP Desk Jet 700/800/900/1000 Series	8	29-BKL
HP Desk Jet 300 Series & Olivetti JP's!	8	7-BKL
EPSON Stylus 400/800/800+/1000	8	1-BKL
EPSON Stylus Colour /PRO/XL	12	2-BKL
EPSON Stylus 820/colour II/IIs	12	23-BKL
EPSON Stylus Colour 200/300/400/500/600/800/850/1520	12	33A-BKL
EPSON Stylus Colour 440/460/480/640/660/700/740/760/900	12	33B-BKL
IBM/LEXMARK 4076/1000/1020/2000/2030/2050 Series	12	35A-BKL
IBM/LEXMARK 5000/5700/7000 & Z Series	12	35B-BKL
CANON, EPSON, HP Fluorescent & Photo Realistic Kits!	12	Please Call!



BUY 3 GET 1 FREE

100% SATISFACTION GUARANTEED

AUSTRALIAN MADE

REUSE RECYCLE REFILL

FREE CATALOGUE WHILE STOCKS LAST

Save at least 60% on the cost of a new cartridge with New Reality compatible cartridges!

COLOUR REFILL KITS FROM ONLY $34.90

Colour kits include cyan, magenta & yellow inks!

DESCRIPTION (Kits Compatible with Printers listed below)	No. of Refills	Product Code
CANON BJC-70/80	3x30	22-CLR
CANON BJC-210/210SP/240/255/265/1000 Series	3x12	25-CLR
CANON BJC-600/610/620	3x8	10-CLR
CANON BJC-2000/4000/4100/4200/4300/4550/5000/5500 BCI-21	3x30	17-CLR
CANON BJC-3000/6000/8000 Series	3x8	47-CLR
HP Colour Desk Jet 300/400/500 Series & Olivetti!	3x12	14A-CLR
HP Colour Desk Jet 600C/660C/690C Series	3x12	14B-CLR
HP Desk Jet 850C/855C/870C/1000C Series	3x3	30A-CLR
HP Desk Jet 710/720/890/900 Series	3x3	30B-CLR
EPSON Stylus Colour /PRO/XL	3x4	16-CLR
EPSON Stylus 820/colour II/IIs	3x12	24-CLR
EPSON Stylus Colour 200/300/400/500/600/800/850/1520	3x12	34A-CLR
EPSON Stylus Colour 440/460/480/640/660/700/740/760/900	3x12	34B-CLR
IBM/LEXMARK 4076/1000/1020/2000/2030/2050 Series	3x6	36A-CLR
IBM/LEXMARK 5000/5700/7000 & Z Series	3x6	36B-CLR
CANON, EPSON, HP Fluorescent & Photo Realistic Kits!	12/Colour	Please Call!

Your printer not listed? We stock Australia's largest range of printer consumables. Call now!

USING NEW REALITY'S INKJET REFILL KITS WILL NOT VOID YOUR PRINTER'S WARRANTY.
BEWARE OF INFERIOR COPIES, BUY THE "ORIGINAL" AUSTRALIAN REFILL KIT!

New Reality has no affiliation with any printer manufacturers or OEM's and not has any arrangement been made with them to form the basis of any statements we make.



We stock Australia's largest range of Inkjet Paper & Media at competitive prices!



New Reality COMPUTER SUPPLIES

New Ideas, New Products.... New Reality

Dealers wanted in all states and NZ!

For more information please call.

New Reality Resources Pty. Ltd. ACN - 073 908 013 Bayside Business Park
Australia Wide FREECALL - 1800 680 605 Shop 1 / 70 Redland Bay Rd
QLD Phone - (07) 3245 2411 Fax - (07) 3245 2755 Capalaba Q 4157
VIC Phone - (03) 9878 8288 Fax - (03) 9878 3933

AUSTRALIA WIDE FREECALL 1800 680 605

All brand and product names are registered trademarks of their respective owners and used solely for descriptive purposes.

FREE AUSTRALIA WIDE DELIVERY! SAME DAY DISPATCH!!

COD * MONEY ORDER * CHEQUE * MASTER * VISA * BANKCARD * AMEX ACCEPTED

Complete Firewall and VPN security appliances
Complete peace of mind in 1 red box

I'd like to see that !

The Watchguard Firebox II

NEW

FIREWALL SYSTEMS

Ph: (03) 9857 4544

Firewalls
From 5 to 5000 users
From 56K to 100MB
From $500 to $15,000

I'd like to see that !

The Watchguard SOHO

www.firewalls.com.au

WE MANUFACTURE QUALITY

RITE PRICE COMPUTERS WONTHAGGI PTY LTD

A.B.N. 97090 017 968 PO BOX 539 OR 13 BILLSON ST, WONTHAGGI VIC. 3995 PH: (03) 5672 4887

PHONE: (03) 5672 4887 OR FAX: (03) 5672 4410 Web Page: www.rpcomputers.com.au

HOURS 9.00AM TO 5.00PM MON-FRI 9.00AM TO 12.00PM SAT

MOTHERBOARDS AT-ATX SS7-SOC A-SOC370 Phone

BIOSTAR S57 MB AT ONB VID&SOUND	$167
PENT. III MB PC100 ATX M754LMR TNT2	$169
PENT III MB GIGABYTE GA-6VXE7+ ATX 133Mhz	$160
ATHLON MB ASUS K7V-T ATX SLOT A	$282
ATHLON MB ASUS A7-PRO ATX U66 SOCK A	$263
ATHLON MB ASUS A7V ATX U100 SOCK A	$292
ATHLON MB ASUS A7V133 U100 SOCK A	$301
ATHLON ABIT KT7A SOC A MB	$290
FIC 1ST MB Socket A VIA KT133 U66 AZ11	$214
PENTIUM III MB ASUS CUV4X S370 133Mhz	$218
PENTIUM III MB ASUS CUBX-E S370 U-100	$270
PENTIUM III MB ASUS CUSL2-C I815 166Mhz	$255
PENTIUM III MB ASUS CUSL2 I815 166Mhz	$305

CPU-SOCKET 7-PENTIUM III-THUNDERBIRD

CYRIX/I8M 686M2-333 CPU M2 - MMX CPU	$59
AMD K6 II P-500 CPU WITH 3D NOW TECH	$111
AMD DURON 600 Mhz SOCKET A 3D CPU	$108
AMD DURON 650 Mhz SOCKET A 3D CPU	$110
AMD DURON 700 Mhz SOCKET A 3D CPU	$120
AMD DURON 750 Mhz SOCKET A 3D CPU	$142
AMD DURON 800 Mhz SOCKET A 3D CPU	$173
AMD DURON 850 Mhz SOCKET A 3D CPU	$225
AMD ATHLON K7-3 P-600 3D CPU SLOT A	$242
AMD ATHLON K7-3 P-700 3D CPU SLOT A	$303
AMD THUNDERBIRD K7-700Mhz CPU SOC A	$229
AMD THUNDERBIRD K7-900Mhz CPU SOC A	$312
AMD THUNDERBIRD K7-950Mhz CPU SOC A	$359
AMD THUNDERBIRD K7-1000Mhz CPU SOC A	$413
AMD THUNDERBIRD K7-1100Mhz CPU SOC A	$491
AMD THUNDERBIRD K7-1200Mhz CPU SOC A	$583
CELERON 633A Mhz S-370 CPU INTEL	$161
CELERON 667A Mhz S-370 CPU INTEL	$178
CELERON 700A Mhz S-370 CPU INTEL	$188
CELERON 733A Mhz S-370 CPU INTEL	$202
CELERON 766A Mhz S-370 CPU INTEL	$258
INTEL PIII 733/133Mhz 256K ATC FC-PGA	$398
INTEL PIII 800/133Mhz 256K ATC FC-PGA	$419
INTEL PIII 866/133Mhz 256K ATC FC-PGA	$432
INTEL PIII 933/133Mhz 256K ATC FC-PGA	$530
INTEL PIII 1000/133Mhz 256K ATC FC-PGA	$600

HARD DISK DRIVES 10.2 GIG - 60 GIG

10.2 GIG SAMSUNG HDD UATA/100 5400RPM	$183
10 GIG SEAGATE ULTRA 66 5400RPM	$188
10.2 WESTERN DIGITAL ULTRA 100 5400RPM	$190
20 GIG SAMSUNG HDD UATA/100 5400RPM	$204
20 GIG SEAGATE ULTRA 66 5400RPM	$211
20 GIG WESTERN DIGITAL UATA/100 5400RPM	$215
20 GIG WESTERN DIGITAL ULTRA 100 7200RPM	$227
30 GIG SEAGATE ULTRA/66 5400 RPM	$242
30 GIG SAMSUNG HD ULTRA/100 5400 RPM	$240
30.7 WESTERN DIGITAL ULTRA 66 5400 RPM	$247
30 GIG WESTERN DIGITAL UATA/100 7200RPM	$289
40 GIG SAMSUNG HD ULTRA/100 5400 RPM	$287
40 GIG WESTERN DIGITAL UATA/100 5400RPM	$298
40 GIG SEAGATE ULTRA/66 5400 RPM	$282
40 GIG WESTERN DIGITAL UATA/100 7200RPM	$322
45 GIG WESTERN DIGITAL ULTRA 66 5400 RPM	$290
60 GIG WESTERN DIGITAL ULTRA/100 5400 RPM	$398

VIDEO/3D VIDEO CARDS - S3 - TRIDENT

4MB EDO AGP/PCI VIDEO CARD X2	$42
8MB AGP VIDEO CARD TRIDENT / S3	$64
8MB PCI VIDEO CARD WITH TV OUT	$67
8MB EDO SIS AGP VIDEO CARD W-TV OUT	$67
VIDEO/CAPTURE CARDS-DIAMOND-MATROX	Phone
16MB RIVA TNT2 VANTA 3D AGP VIDEO CARD	$91
32MB RIVA TNT2 M64 3D AGP VIDEO CARD	$120
32MB RIVA TNT2 M64 PCI VIDEO CARD	$157
GeFORCE 2 MX AGP 32MB APOLLO RETAIL CARD	$212
GeFORCE 2 MX AGP 32MB APOLLO RETAIL TV OUT	$218
3DFX VOODOO5 4500 AGP 32MB VIDEO CARD	$398
3DFX VOODOO5 5500 AGP 64MB VIDEO CARD	$634
TV EXCEL TV TUNER+CAPTURE CARD+REMOTE	$131
MATROX MARVEL G-400 PLUS 16MB VID CAP/EDIT	$663
MATROX MILLENIUM G400 MAX DUAL 32MB 360MHz	$454
MATROX MILL G450 SDR DUAL 16MB 360MHz NO/C	$201
MATROX MILLENIUM G450 DDR DUAL 16MB 360MHz	$255
MATROX MILLENIUM G450 DDR DUAL 32MB 360MHz	$345
SPECTRA 3000 TNT GeFORCE AGP 32MB TV OUT	$351
ASUS GeFORCE 256 32MB AGP-V6600 TV&3DG	$352
ASUS GeFORCE 256 64MB AGP-V6600 PURE	$411
ASUS GeFORCE 256 DDR 32MB 3DGLASS V-6800D	$399
ASUS GeFORCE II MX 32MB V-7100 TV OUT	$235
ASUS GeFORCE II MX 32MB V-7100 DIG OUT	$230
ASUS GeFORCE II GTS DDR 32MB V-7700 PURE	$482
ASUS GeFORCE II GTS DDR 32MB V-7700D TV&3DG	$517
ASUS GeFORCE II GTS DDR 64MB V-7700 PURE	$741
ASUS AGP V77TV-T32 TV-OUT TVTUNER 32MB DDR	$634
ASUS AGP V77TV-T64 TV-OUT TVTUNER 64MB DDR	$823

MEMMORY - FLASH - RAM 16MB - 256MB

72 PIN 16 MEG SIMM 60NS EDO	$92
72 PIN 32 MEG SIMM 60NS EDO	$183
168 PIN SDRAM DIMM MODULE 32MB PC100	$35
168 PIN SDRAM DIMM MODULE 64MB PC100	$56
168 PIN SDRAM DIMM MODULE 64MB 133Mhz	$58
168 PIN SDRAM DIMM MODULE 128MB PC100	$110
168 PIN SDRAM DIMM MODULE 128MB 133Mhz	$106
168 PIN SDRAM DIMM MODULE 256MB PC133	$223
KODAK DC CAMERA FLASH RAM 32MB	$140
KODAK DC CAMERA FLASH RAM 64MB	$241
KODAK DC CAMERA FLASH RAM 96MB	$375

MONITORS 15" - 21"

15" NON-INT MONITOR MPRII STD	$236
15" MITSUBISHI DV1554 DIGITAL MPRII MON	$265
15" VIEWSONIC E651 MPRII 0.28P MONITOR	$254
15" MITSUBISHI DV1570I DIGITAL MPRII MON	$310
15" SONY N-I L/R DIGITAL MONITOR	$471
15" SONY LCD FLAT PANEL DISPLAY MONITOR	$2,190
17" N-I DIGITAL MONITOR STD 0.28P	$357
17" MITSUBISHI DV1770F 0.27P DIG MPRII MON	$381
17" MITSUBISHI DV1772IF 0.26P DIG MPRII MON	$478
17" MITSUBISHI DV17NF 0.25P DIG MPRII MON	$590
17" VIEWSONIC E70 0.27P DIGITAL MONITOR	$417
17" VIEWSONIC PS775 1600x1200 DIGITAL	$635
17" SONY N-I L/R FD TRINITRON DIGITAL MON	$739
18" SONY LCD FLAT PANEL DISPLAY MONITOR	$5,639
19" MITSUBISHI 1995SL 0.26P DIG MONITOR	$726
19" MITSUBISHI DV19NF 0.25P DIG MONITOR	$1,059
19" SONY N-I L/R FD TRINITRON DIGITAL MON	$1,313
21" MITSUBISHI DV2107 0.25P DIG MPRII MON	$1,718
21" SONY N-I L/R FD TRINITRON DIGITAL MON	$2,093

NETWORK HUBS

10 BASE T 8 PORT ETHERNET HUB	$67
100MBPS 8 PORT ETHERNET HUB	$166
100MBPS 8 PORT ETHERNET HUB LINKSYS	$272
10 BASE T 16 PORT ETHERNET HUB	$123
100MBPS 16 PORT ETHERNET HUB	$325
100MBPS 16 PORT ETHERNET HUB LINKSYS	$472

KEYBOARDS & MICE Phone

WIN95/98 104 KEY STD KEYBOARD	$24
HONEYWELL K/B GENUINE SPACEMATE	$36
HONEYWELL K/B GENUINE MM EURO	$54
MICROSOFT K/B NATURAL ELITE 98	$56
MICROSOFT K/B INTERNET WIN98+ OEM	$68
MOUSE STD MS COMPATIBLE S. OR PS/2	$12
MS MOUSE PS/2 & USB INTELLUEYE OPTICAL	$85
MS MOUSE INTELLI EXPLORER PS/2 & USB	$92
HONEYWELL MOUSE PS/2 & SERIAL TS4	$36

PRINTERS HP- EPSON- CANON

HP 640 COLOR INK JET PRINTER A4	$173
HP 840C COLOR INK JET PRINTER A4	$263
HP 930C COLOR INK JET PRINTER A4	$306
HP 950C COLOR INK JET PRINTER A4	$436
HP 970 CXI COLOR INK JET PRINTER	$532
HP 1125 C COLOR INK JET PRINTER A3	$567
HP1100 LASER PRINTER 600DPI 8PPM A4	$738
HP 1100A LASER PRINT/SCAN 8PPM A4	$865
HP2100 LASER PRINTER 1200DPI 10PPM A4	$1,288
HP OFFICE JET 745C SCAN/COPY/PRI/FAX	$627
HP OFFICE JET 765C SCAN/COPY/PRI/FAX	$712
HP OFFICE JET PSC500 SCAN/COPY/PRINT	$708
HP OFFICE JET R65C SCAN/COPY/PRINT	$734
EPSON STYLUS COLOR 480 720x720 P	$140
EPSON STYLUS COLOR 580 1440x720 USB	$173
EPSON STYLUS COLOR 680 2880x720 USB&P	$264
EPSON STYLUS COLOR 760 1440x720 USB&P	$336
EPSON STYLUS COLOR 860 1440x720 USB&P	$345
EPSON STYLUS COLOR 880 2880x720 USB&P	$427
EPSON STYLUS COLOR 900 1440x720	$635
EPSON STYLUS COLOR 980 2880x720	$699
EPSON STYLUS COLOR 1160 1440x720	$761
EPSON STYLUS PHOTO 720 1440x720 USB&P	$399
EPSON STYLUS PHOTO 870 1440x720 USB&P	$599
EPSON STYLUS PHOTO 890 2880x720 USB&P	$577
EPSON STYLUS PHOTO 1270 A3+ 1440x720	$842
CANON BJC 85 A4 COLOR PORTABLE	$344
CANON BJC 1000 A4 COLOR 720DPI	$104
CANON BJC 2100 A4 COLOR 720DPI USB&P	$139
CANON BJC 3000 A4 COLOR PHOTO U&P	$240
CANON BJC 4650 A3 COLOR 720DPI	$396
CANON BJC 5500 A2 COLOR 720DPI	$1,185
CANON BJC 6200 A4 COLOR 1440DPI	$348
CANON BJC 6500 A3 COLOR 1440DPI	$598
CANON BJC 8200 A4 COLOR 1800DPI	$598

SCANNERS STD - HP - CANON

HP 3300C SCANNER 600DPI USB	$157
HP 3400C SCANNER 600/1200DPI USB & P	$202
HP 4300C SCANNER 600/9600DPI USB & P	$261
HP 5300C SCANNER 1200/9600DPI USB	$450
CANON N340P SCANNER 300/600DPI	$104
CANON N640P SCANNER 600/1200DPI	$132
CANON N650U SCANNER 600/1200DPI	$166
CANON N1220U SCANNER 1200/2400DPI	$263
CANON D660U SCANNER 600/1200DPI	$263

CASES DESKTOP - FULL - AT - ATX

AT MINI TOWER CASE LED LCD W P/S	$50
ATX DESKTOP CASE DELUXE W P/S	$120
ATX MIDI TOWER CASE W P/S	$67
ATX MIDI A-OPEN HX45 CASE DELUXE	$119
ATX GALAXY MIDI/DESK TOP DELUXE	$139
ATX FULL A-OPEN HX08 CASE DELUXE	$200
EXTRA FAN COOLING FOR CASE FRONT	$15

SOLA UPS 325 SERIES Phone

SOLA UPS 325 SERIES 400VA WIN95/98	$315
SOLA UPS 325 SERIES 750VA WIN95/98	$522
SOLA UPS 325 SERIES 1000VA WIN95/98	$696

MISC DRIVES - LS120 - IOMEGA - JAZZ

FLOPPY DISK DRIVE 3.5" 1.44MB	$28
LS 120 FLOPPY MEDIA 120MB PC	$17
ZIP DRIVE INTERNAL IDE 100MB OEM	$156
IOMEGA ZIP DRV EXT. 100MB PARALLEL	$236
IOMEGA ZIP DRIVE EXT. 100MB USB	$220
IOMEGA 100MB ZIP DISKS EACH PC	$22
IOMEGA ZIP DRV INT. IDE 250MB OEM	$220
IOMEGA ZIP DRV EXT. 250MB PARALLEL	$352
IOMEGA ZIP DRV EXT. 250MB USB	$405
IOMEGA 250MB ZIP DISKS EACH PC	$30
MULTIMEDIA - CD 44 - 50 SPD & DVD	
32 BIT PCI SOUND CARD - AUDIO STD	$23
CREATIVE VIBRA 128 SOUND CARD OEM	$40
CREATIVE SOUND BLASTER LIVE! VALUE OEM	$99
CREATIVE SOUND BLASTER LIVE! DE 5.1	$194
CREATIVE SOUND BLASTER LIVE! PLATINUM	$466
40+ SPEED CD-ROM DRIVE STD	$69
48 SPEED CD-ROM DRIVE SONY/PANASONIC	$75
50 SPEED CD-ROM DRIVE MITSUBISHI	$79
SAMSUNG 12xDVD DVD-ROM DRV ONLY	$139
PIONEER 16xDVD (40xCD) TRAY DRV & S/W	$217
MITSUBISHI 16xDVD (40xCD) DVD-ROM DRV	$217
SHINTARO DVD KIT 16xDVD,MPEG2C,WEB DVD	$422
MAGIC DVD DECODER CARD MPEG-2 PCI	$140
VIDEO LOGIC MPEG-2 DVD CARD PCI	$163
PROKIT SONY 32Rx8Wx4RW IDE CD-RW KIT	$352
PROKIT SONY 32Rx12Wx8RW SCSI CD-RW KIT	$657
SONY 32Rx8Wx4RW INT. IDE DRIVE ONLY	$278
SONY 32Rx10Wx4RW INT. IDE DRIVE ONLY	$357
MITSUBISHI 32Rx10Wx4RW IDE CD-RW KIT	$315
SONY 32Rx12Wx4RW SCSI CD-RW KIT	$598
SHINTARO CDRW100 IDE 32x10x4 SONY KIT	$446
RICOH 24Rx6Wx4RWx4DVD IDE INT KIT	$531
RICOH 32Rx8Wx8RW IDE INT CDR/RW KIT	$392
RICOH 32Rx12Wx10RW IDE INT CDR/RW KIT	$483
RICOH 32Rx12Wx10RWx8DVD IDE INT KIT	$702
STD 120-150 WATT SPEAKERS 240V	$18
COMPRO 380 WATT 240V SPEAKERS	$52
ALTEC LANSING ACS33 SUB KIT	$86
ALTEC LANSING ACS45.1 SUB KIT	$152
ALTEC LANSING ACS54 GAMER SUB KIT	$202
ALTEC LANSING ACS56 GAMER SUB KIT	$270
CREATIVE CAMBRIDGE PCWORKS SPKS	$92
CREATIVE CAMBRIDGE PCWORKS FPS-1000	$151
SONY MVC-FD85 ZOOM DIG CAMERA	$1,416
SONY MVC-FD90 ZOOM DIG CAMERA	$1,670
SONY MVC-FD95 ZOOM DIG CAMERA	$2,069
SONY DSCS30 CYBERSHOT DIGITAL CAMERA	$1,100
SONY DSCS70 CYBERSHOT DIGITAL CAMERA	$1,814
KODAK DVC-325 DIGITAL VIDEO CAMERA USB	$133
KODAK EZ200 FUN DIG CAM & VID CONF.	$227
KODAK DC-3200 ZOOM DIGITAL CAMERA	$448
KODAK DC-3400 ZOOM DIGITAL CAMERA	$831
KODAK DC-3800 ZOOM DIGITAL CAMERA	$701
KODAK DC-4800 ZOOM DIGITAL CAMERA	$1,349
KODAK 'USB' COMPACT FLASH CARD READER	$91
KODAK POWER PACK FOR CAMERA	$51
USB CONTROLLER CARD 2 x USB PORTS	$61
4-PORT USB HUB WITH POWER	$61

MODEMS 56.6 STD - 56.6 HIGH END Phone

56.6 INTERNAL VOICE/FAX/DATA PCI STD	$61
56.6 EXTERNAL VOICE/FAX/DATA STD	$103
56.6 EXTERNAL V/F/D NETCOMM MEGA I MODEM	$106
56.6 PCMCIA FAX/DATA MODEM	$154
NETCOMM 56K FAX/SVD ULTRA II V.90	$186
NETCOMM 56K FAX/SVD ULTRA II V.90 USB	$211
BANKSIA WAVE 56.6K MODEM SP56 V.90	$185

OTHER - FAN - WIN98 - FLOPPY

6x86-P???/ AMD K6 FAN HEAVY DUTY	$18.15
HUGE ATHLON / DURON HEAVY DUTY COOLER	$22.99
PRINCO RE-WRITABLE MEDIA 74MIN	$3.03
BLANK CD'S FROM - KODAK GOLD 74	$1.88
BLANK CD'S FROM - PIONEER BLUE/SILVER	$1.59
BLANK CD'S FROM - PRINCO 74	$1.21
BLANK CD'S FROM - PRINCO 74 SPINDLE 50	$41.87
BLANK CD'S FROM - PRINCO 80 MIN	$1.68
WINDOWS MILLENNIUM/W98SE WITH PC ONLY OEM	$204
WINDOWS 2000 PRO WITH PC ONLY OEM	$272
NE2000 COM. PCI/ISA COMBO CARD	$28
ETHERNET 100MPS COM. PCI CARD	$36
PCMCIA ETHERNET 10MB COMBO BNC&UTP	$70
PCMCIA ETHERNET CARD 10/100 UTP	$133
PROMISE ULTRA 66 CONTROLLER PCI	$67
PROMISE ULTRA 100 CONTROLLER PCI	$103

SYSTEMS IMAC, IBOOK & G4

IMAC 350 64/7G/CD/512/56K- INDIGO	$1,792
IMAC DV 400 64/10G/CD/FWIRE/512/56K I & R	$2,181
IMAC DV+ 450 64/20G/DVD/FWIRE/512/56K I,R & S	$2,661
IMAC DV SE 500 128/30G/DVD/FWIRE/512/56K G&SNOW	$3,154
IBOOK 366 64/10GB/12.1" TFT/CD/FIREWIRE/AV I&L	$3,235
POWERBOOK G3 400/64MB/10GB/DVD/56K/FWIRE	$4,904

SYSTEMS PENTIUM III - ATHLON - THUNDERBIRD

INTEL CELERON 633A 64MB, 20.4, ATX	$1,133
INTEL CELERON 700A 64MB, 20.4, ATX	$1,157
AMD DURON 600Mhz, 64MB ATX ASUS MB	$1,233
AMD DURON 700Mhz, 64MB ATX ASUS MB	$1,244
AMD DURON 800Mhz, 64MB ATX ASUS MB	$1,293
AMD THUNDERBIRD K7- P700 64 MB ATX ASUS MB	$1,354
AMD THUNDERBIRD K7- P900 64 MB ATX ASUS MB	$1,430
AMD THUNDERBIRD K7- P1000 64 MB ATX ASUS MB	$1,521
AMD THUNDERBIRD K7- P1200 64 MB ATX ASUS MB	$1,676
PENTIUM III 800 64MB,20.4, 4MB AGP, S/C, ATX	$1,378
PENTIUM III 866 64MB,20.4, 4MB AGP, S/C, ATX	$1,390
PENTIUM III 933 64MB,20.4, 4MB AGP, S/C, ATX	$1,480
PENTIUM III 1000 64MB,20.4, 4MB AGP, S/C, ATX	$1,543
* ALL SYSTEMS INCLUDE:	
* ASSEMBLY - BENCH TESTING	
* 20.4 GB HD, ATX CASE, FLOPPY DRIVE,	
* 15" N-I L/R STD MONITOR, 40x+ CD-ROM DRV	
* KEYBOARD, MOUSE, ALL MANUALS & DRV CD'S	
* CELERON SYSTEM WITH GB MB & ATX	
* ATHLON SYSTEM ASUS MB & ATX CASE	
* PENTIUM III SYSTEM GB MB & ATX CASE	
WARRANTY ON-SITE 1 YR. $4000.00	$95
WARRANTY ON-SITE 2 YRS. $4000.00	$127

NEW TOSHIBA NOTEBOOKS:

SatP 4310XCDT,600C,64MB,13.3"TFT,6GB,CD,56K,W98	$2,990
SatP 4310XCDT,600C,128MB,13.3"TFT,6GB,CD,56K,W98	$3,139
SatP 4330XCDT,650C,64MB,14.1"TFT,10GB,CD,56K,W98	$3,724
SatP 4380XDVD,750P3,64MB,14.1"TFT,12GB,DVD,56K,98	$4,704
SatP 4600XDVD,650P3,64MB,14.1"TFT,10GB,DVD,56K,98	$4,362
SatP 4600XDVD,700P3,128MB,14.1"TFT,20GB,DVD,56K,98	$4,802
Tecra 8100,750P,128MB,14.1"TFT,20GB,DVD,56K,W98	$6,812

WE WILL NOT BE BEATEN ON PRICE OR QUALITY - ALWAYS RING FOR LATEST PRICING - GOODS SHIPPED ANYWHERE IN AUSTRALIA

PAYMENT TERMS STRICTLY COD, CASH, CASH DIRECT DEPOSIT OR (BANKCARD, MASTERCARD OR VISA @ 2.5% HANDLING CHARGE)

1 YEAR (12 MONTHS) RTB WARRANTY ON ALL PARTS PRICES/PRODUCTS SUBJECT TO CHANGE WITHOUT NOTICE ALL PRICES INCLUDE GST

EMAIL TO: sales@rpcomputers.com.au WEB PAGE AT: www.rpcomputers.com.au

PLACE ORDERS VIA PHONE (03) 5672 4887 FAX: (03) 5672 4410



RRP. $275.00

- NVIDIA Second generation T&L engines
- 256-bit graphics architecture
- Direct X and Full OpenGL 1.2 3D support
- Direct X Texture Compression & S3TC support
- Integrated 350MHz RAMDAC
- Resolution up to 2048x1536, True color @ 60MHz

For your nearest dealers

NSW	
ABet Computer	(02) 8850 6677
CR Computer	(02) 9882 3535
Espco Computer	(02) 9906 3100
First Tech.	(02) 9266 0699
Informtech	(02) 9649 8133
I Store	(02) 9389 8255
Nepean System	(02) 4721 7566
Sunstar Tech	(02) 9893 9688
Sydney PC & Part	(02) 9299 3939
VIC	
Belmont Computer	(03) 5241 6188
Comnet Tech	(03) 9326 6980
H-Technology	(03) 9534 3225
WA	
IVC Computer	(08) 9791 2113
Synchro Computer	(08) 9361 8033
Trinix Business	(08) 9356 1600
QLD - Brisbane	
Advance Computer	(07) 3217 8300
C-Systems Int.	(07) 3263 1888
First Technology	(07) 3216 0885
QLD - Gold Coast	
First Technology	(07) 5597 5486
S.A.	
Aeon (KB) Comp	(08) 8374 4500
Leader Computer	(08) 8221 6222

stress-free web hosting

- advanced features
- integrated ecommerce
- maximum reliability
- technical support
- friendly service
- affordable plans

from **$14.95** per month



sign up today for

50mb of webspace •
all domains hosted •
yourdomain.com.au •
MS FrontPage™ 2000 •
instant account setup •
pop3 email accounts •
128bit secure server •
email forwarding •
personal cgi bin •
mysql database •
full ftp access •
99.9% uptime •
30 day guarantee •
resellers welcome •

Server101.com
webhosting & ecommerce

come and see us
IT Expo / Comdex
Sydney 7th - 9th March
quote promo code
1001 at the stand
STAND #L29

ph: 07 3876 6101
fax: 07 3876 3101

SB Computers

web: www.sbc.com.au

95 Phillip Street
Parramatta NSW 2150
Tel :(02) 9635 7844
Fax :(02) 9633 4563

Dealer Inquiry's Welcome

Disk Drives		Main Board(AT or ATX)		Video Cards and Devices	
1.44 FDD	$30	Celeron 700	$380	8MB AGP	$65
100MB Zip IDE	$110	Celeron 733	$450	32MB TNT 2 M64	$150
250MB Zip IDE	$220	PIII 800	$650	Leadtek GF2 32M	$320
10GB HD	$220	PIII 866	$750	Lifeview USB TV box*	$180
20GB HD	$250	PIII 933	$1,050	Lifeview USB capture Box*	$110
30GB HD(7200rpm)	$320	PIII 1G	$1,330	Lifeview VGA to TV converter*	$140
40Gb HD(5400rpm)	$330	**Centos 1394 and SCSI solutions**		Lifeview PCI Capture card	$100
CDR Drives		PCI Firewire card*	$140	Lifeview PCI TV/FM Tuner*	$140
Sony 8x IDE	$290	Firewire + IDE Raid card	$250	Lifeview USB Camera**	$110
Mitsubishi 10xIDE	$330	Firewire External IDE	$255	3Demon Mpeg Encoder with built in Audio	$265
Sony 10x SCSI	$450	Firewire IDE HD Rack	$260	**Misc.**	
Pack of 100 CDRs	$90	PCI SCSI 2 card**	$65	Lifeview USB finger print scanner	$310
Memory (PC133)		PCI SCSI UW 40M**	$180	Smart card reader	$140
64MB	$70	PCI SCSI UW 80M**	$270	USB Infra-red transceiver	$140
128MB	$130	PCI SCSI UW 160M 2 ch**	$400		
256MB	$420	PCI 100M IDE Raid Card	$95		

*for PC & Mac ** for PC, Mac & Linux

Please call for most updated prices or visit our web site

To advertise contact Jeanette Gray

(02) 9288 9151

jgray@acp.com.au

www.stroudco.com

Want to Save 95% on printing
Fix common printing problems
Free delivery
Fast Service and same day despatch
Free Inkjet Refills secrets with order
Fully qualified support team

BULK INK AVAILABLE

BLACK REFILLS from only $28.00

PRINTER	NO. OF FILLS	KIT NO
CANON BJ30/50/70/80/85 BCI-10/11 BK	30/80	C10
CANON BJ10/BJ200/BJ210/BJ210sp/BJ255sp	7	C2/C2A
CANON BJC600/610/620	15	C5
CANON BJC2000/4000/4200/4550 BCI-21/20	50/8	C8
CANON BJC 3000/6000/6500	4	C19
CANON BJC 7000/7100	6	C15
HP DESKJET 400, 500 & 600 SERIES	7	H2/H4
HP DESKJET 700/800/900/1100/1200 SERIES	6	H13
HP DESKJET 1200 B, Y, C, M	6	H8
EPSON STYLUS COLOUR 750/900/1200	12	E#
EPSON STYLUS 400/800/1000	8	E1
EPSON STYLUS COLOUR / PRO / XL	6	E2
EPSON STYLUS 820 / COLOUR 11/11S/200	12	E4
EPSON COLOUR 400/500/600/700/Photo Ex	12	E7
EPSON COLOUR 440/640/740/800/850/1520	12	E7
EPSON STYLUS COLOUR 750/900/1200	12	E14
IBM 4076/LEXMARK	6	M1
LEXMARK 3200/5000/7000	5	M5
LEXMARK Z SERIES	5	M5
XEROX 4004/CITOH CJ300	6	M3

COLOUR REFILLS from only $38.00

PRINTER	NO. OF FILLS OF EACH COLOUR	KIT NO
CANON BJC 3000/6000/6500/8500	5	C20
CANON BJC 50/70/80/85	60	C11
CANON BJC210/BJC210sp/BJC255sp	12	C3
CANON BJC600/610/620	8	C6
CANON BJC4000/4100/4200/4550 BCI-21	30	C9
CANON BJC 7000/7100	6	C16
HP DESKJET 400, 500 & 600 SERIES	12	H3/H5
HP DESKJET 700/800/900/1100/1200 SERIES	7	H14
EPSON STYLUS COLOUR / PRO / XL	6	E3
EPSON STYLUS 820/COLOUR/11/11S	12	E5
EPSON COLOUR 200/400/500/600/800/1520	12	E8/E9
EPSON COLOUR 440/480/580/640/740	12	E9
IBM 4076/LEXMARK	12	M2
LEXMARK Z SERIES	12	M6

Complete range of Black colour & photokits
Enquiries/Order on Secure website or credit cards, money order, cheques, COD

Stroudco
Specialist in Inkjet Solutions
www.stroudco.com
email: ink@stroudco.com
Ph/Fax: (03) 9879 2800

#1 SOURCE IN MEMORY, HARDWARE & NETWORKING

72 pin RAM
32MB - $242
64MB - $315
PC100 RAM
32MB - $85
64MB - $135
256MB - $395
PC133 RAM
64MB - $121
128MB - $195
PC66 - CALL

128 MB PC100 $140

CPU's
P166 - $100
P200 #$110
P233 - $130
PIII 750 - $520
PIII 866 - $755
PIII 1000EB - $1250

NOTEBOOK MEMORY
IBM
Gateway
Toshiba
Dell
Compaq
Digital
HP
NEC

*Prices inc GST, subject to change without notice

CDRW
Sony
HP
Yamaha
Ricoh
La Cie
Mitsubishi

PRINTER RAM
CALL FOR ALL MODELS

HDD
10G IDE - $210
20G IDE - $285
30G IDE - $395

SCSI
9.1GSCSI - $510
18GSCSI - $785
36GSCSI - Call

Notebook HDD
6GB - $315
10GB - $360
12GB - $419
15GB - $550

Used Notebooks
CALL

Peripherals
M'board
Graphics/ Sound-card
Modem
Printers
Monitors
Scanners
Speakers

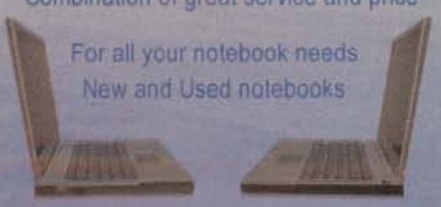
Performance Memory & Peripherals
1, 109 Alexander Street, Crows Nest 2065 Tel: 02 9906 4533 Fax: 02 9906 1871
www.performancememory.com.au

Opening Hours: 9am - 6pm, 7 days



Combination of great service and price

For all your notebook needs
New and Used notebooks

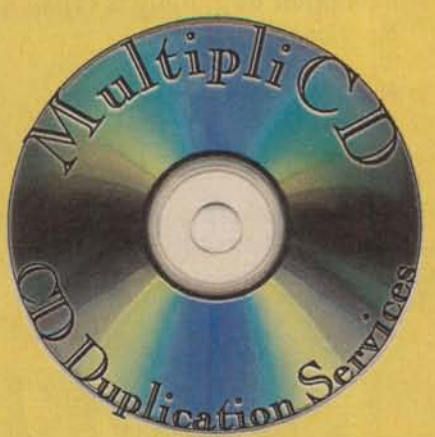


ALTIMA COMPUTERS P/L
4/48 Park Road, Cabramatta, NSW 2166

Tel: (02) 9755 7835
Fax: (02) 9755 7917
www.altimaco.com.au
www.altimaco.com

CD Duplication

* Competitive pricing
* Quick turn around
* Any quantity available
* Full verification offered
* Business card and other shape CDs available



www.duplication.com.au
info@duplication.com.au

Tel: 03 98897946
Fax: 03 98094842

MICROTOP

The MICRO desktop computer

Phone: (08) 9367 1398
Facsimile: (08) 9367 1997
email: sales@microtop.com.au
www: http://www.microtop.com.au

Small & Light

The computer is an astonishing 150mm x 106 mm x 32 mm (about the size of a walkman) and weighs 460g. The Microtop is a radically new idea. It provides all the features of a standard desktop computer, without the size.
Carry it in your pocket: between classrooms, for presentations, between the office and home.

Applications

Applications for Microtop include:

* Home
* Office
* Education
* Industrial

Docking Unit

To keep the computer's size to a minimum, the Microtop is supplied with a simple plug-in Docking Unit, which contains the Floppy Disk and CD-ROM or DVD-ROM drives, parallel and serial ports.

Powerful

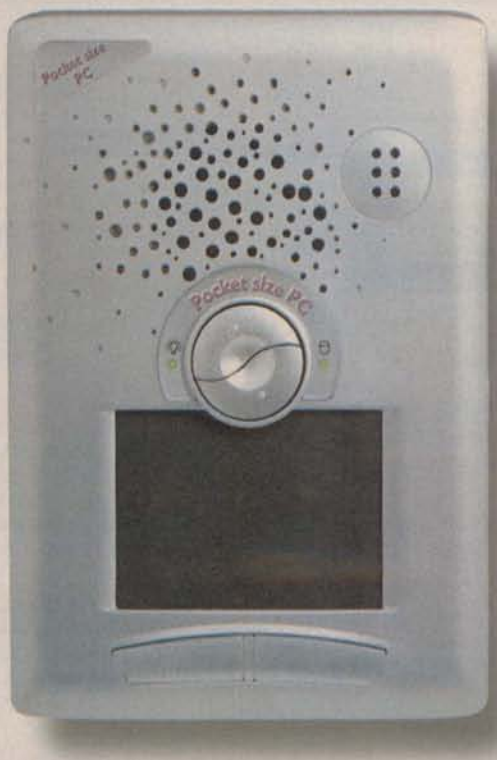
Based on the Intel i810 chipset, the Microtop accepts Celeron and Pentium III processors, up to 256 MBytes SDRAM and 20 GByte (larger when available) 2.5-inch hard disk drives, making this a grunty machine.
Microtop contains: An integrated 3D video accelerator with 4 MBytes of shared memory, an XGA video output, and a TV output (NTSC or PAL); An integrated 16-bit stereo Sound Blaster / Adlib compatible, full duplex sound port with microphone and headset connectors, a built-in speaker and volume control; PS/2 keyboard and mouse connectors, two USB ports and a Synaptics touchpad with left and right click buttons and scrolling up/down buttons.

Operating Systems

They all work: Microsoft Windows 95, 98, ME, NT and 2000 and, Linux.

Upgradeable

Hard Disk Microtop uses a standard notebook hard disk drive.
Memory Up to 256 MBytes. SO-DIMM.
Processor Standard Socket 370, (FC-PGA package) socket. A wide variety of choices from Intel.



affordable solutions

- **Systems, parts & peripherals sales.**
 e.g.: Asus, Acer, AMD, APC, Canon, Epson, HP, IBM, Intel, Microsoft, Mitsubishi, Netgear, Seagate, Sony, ...
- **Computer upgrading & repair Services.**
- **Networking: maintenance, Upgrades, administration, and consulting.**
- **Internet access solutions and Web hosting.**
- **Finance -- Leasing and Rental.**

Asus Notebook PCs

L7300 **$3495**
Intel Pentium III 600 Mhz processor, 64Mb SDRAM,13.3" TFT Screen, 4Mb 128bit Video diaplay, dual view and dual application, built-in 24xCDROM, FDD, 12 Gb HDD, 56k Fax modem, 3D Audio, Super light weight and compact size, Windows 98.

L8400 **$4690**
Intel Pentium III 700 processor with Intel SpeedStep technology, 128Mb SDRAM, 14.1" TFT Screen, 8Mb 128bit 3D diaplay with TV out, Dual view and dual application, built-in 8xDVD, FDD, 10 Gb HDD, 56k Fax modem, 10/100 LAN, 3D Audio, Light weight and Slim design, Windows 98.

Acer PCs, Notebooks and Peripherals

AcerPower Se PC **$1590**
Cel533, 64Mb, 7.5Gb, 15", 10/100 LAN, 50x CD ROM, Win98 & s/w package.

AcerPower Sn PC **$2099**
P III 650, 128Mb, 15Gb, 15", 50x CD ROM, 10/100 LAN, 16Mb SVGA, Win98 & s/w.

Acer TravelMate 520iT Notebook **$3199**
Cel550, 64M, 4.8Gb, 12.1" TFT, 24x CD ROM, 56k modem, 10/100 LAN, Win98 & s/w.

Acer TravelMate 735TLV Notebook **$6995**
P III 650, 128Mb, 12Gb, 15" TFT, 6xDVD, 56k modem, 10/100 LAN, Win98 & s/w

We not only supply high quality PCs and notebooks from the reputable brands, but also provide components, peripherals, built-to-order systems, upgrades, maintenance and repair services.
Other than in store services, we provide on-site system and network installations, maintenance, upgrades and administration as well.
Our Internet access solutions and web hosting are designed and tailored for small to medium business, and are cost effective.

I. STORE

http://www.istore.com.au

Your total solutions

NSW	VIC	QLD
Tempe Ph: (02) 9558 9288 Bondi Junction Ph: (02) 9389 8255	Nunawading Ph:(03) 9894 8466 Melbourne Ph:(03) 9670 9686 Malvern Ph:(03) 9576 1488	Windsor Ph:(07) 3357 9377 Upper Mt. Gravatt Ph:(07) 3849 8000

MEMORY ★ MEMORY ★ MEMORY

MANUFACTURERS/MODELS/SIZES		$
Acer - Extensa 710DX, 310	128mb	211
Apple - G3/G4-Desktp	256mb	265
Compaq - Arm. M300, M700	128mb	218
Compaq Presario 1270/1682	128mb	218
Gateway - Solo	64mb	120
HP - Lsrjet 4000, 4000N	32mb	70
HP Lsrjet 8000	64mb	132
IBM - PC300GL	128mb	166
IBM - Aptiva 2164	128mb	166
IBM - Thinpad 600X, 570E	128mb	218
Toshiba - 8000 Pill	128mb	218
Toshiba - 4270XDVD	128mb	218
Toshiba - Sat.Pro 420CDS, 430CDT	32mb	391
Toshiba - Equium 7100D, 7100M	128mb	220
Toshiba - Sat 4030CDT, 4030CDT-NT	128mb	211

SDRAM	
64Mb (8x64) PC133	$67
64Mb (8x64) PC100	$84
128Mb (16x64) PC133	$136
128Mb (16x64) PC100	$136
256Mb (32x64) PC133	$265
512Mb (64x64) PC100	$1,031
NOTEBOOK SDRAM	
64Mb (8X64) PC100	$84
128Mb (16X64) PC100	$174
SIMMS 72 PIN	
16Mb EDO 60ns	$65
32Mb EDO 60ns	$207
SIMMS 30 PIN	
4Mb Parity	$21

LIFETIME WARRANTY

www.pelhampl.com.au
Overnight delivery $11. Credit cards welcome.
Prices subject to change, please call for latest.
Prices valid as at 23/01/01

PELHAM Pty Ltd

PH: (02) 9980 6988 FAX: (02) 9980 6891
E-mail: ram@pelhampl.com.au
1/100 Yarrara Rd,
Pennant Hills, NSW 2120

Clone your CD

Super fast duplicating & replicating service

- Premium recordable disks • Any quantity
- 100% verification • Unbeatable rates
- Same day duplicating service



CD ROM SERVICES

Tel: (02) 9954 9885
Shop 8.06, Northpoint, Nth Syd
www.cdroms.com.au

A complete range of memory and accessories for Cameras, MP3 Players & PDAs.

64MB SanDisk CompactFlash	$189
32MB SmartMedia	$101
SanDisk USB CompactFlash Reader	$65
32MB MultiMediaCard	$182
More in stock...	

Order on-line from our website...
www.flashmemory.com.au

Diskette Duplication CD Replication

Consider the advantages of using one supplier for all your software needs....
Fast Turnaround, Low Cost.



- Diskette Duplication • Software Packaging
- Direct Disk Printing • Label Printing
- Disk & CD-ROM Duplication Equipment
- Printing of Manuals & Boxes



We can provide colour printed CD booklets, CD screen printing, Art preparation, Corporate logo CD printing and CD pressing.
CD -ROM, CD Audio and CD-Video formats supported.
Ask about our package deals which includes screen print 2 page full colour booklet and tray insert.

ISD
INDEPENDENT SOFTWARE DUPLICATION
Unit 22/7 Packard Avenue, CASTLE HILL NSW 2154 AUSTRALIA
Phone: (02) 9899 4044 Fax: (02) 9899 4085 Email: sales@copysoft.com.au
Web: www.copysoft.com.au

Continuing excellence since 1984

ParallelOnline
www.parallelonline.com.au

Phone: 1300-134-324
Fax: 1300-134-330
Email: sales@parallelonline.com.au
Real People, Real Service, Real Products.

Proud suppliers of
hp LG AGFA DELL Kodak intel COMPAQ iomega IBM Seagate EPSON



This Month
Special Prices on Kodak Cameras!

WANT TO ADVERTISE?

Call Jeanette Gray (02) 9288 9151 Email: jgray@acp.com.au

PC SUPERMARKET CD AND ONLINE

Australian Personal Computer

For advertising details contact Jeanette Gray on (02) 9288 9151

COMPANIES INSIDE

- Diskmax
- PC Servicecentre

www.diskmax.com.au

CD COPYFAST

- PROFESSIONAL CD-ROM DUPLICATION SERVICES
- UP TO 5000 DISCS IN 24-HRS !
- SILKSCREEN FULL COLOUR PRINTING
- CUSTOMISED PRINTING ON BLANK CD-R
- FLOPPY DISK DUPLICATION
- SAME DAY SERVICE AVAILABLE

DiskMax Technology Pty Ltd (02) 9699 3333 sales@diskmax.com.au

To advertise contact Jeanette Gray (02) 9288 9151 jgray@acp.com.au

LOOKING TO SERVICE YOUR PC?

LOOK TO THE PEOPLE WHO BUILT IT.

You didn't compromise on quality when you invested in Compaq technology, now there's no reason to when you're servicing or upgrading your PC.

Compaq Service Centres, Australia-wide, are all run by Compaq-trained technical specialists. They are all up to date with the very latest developments and have priority access to genuine parts and peripherals.

So whether it's memory, hard disks, storage, printers, scanners or just a service, contact the people who know your PC best.

SERVICE/UPGRADES/SUPPORT/SALES

CALL 1300 721 021

or visit www.compaq.com.au/pcservice

SERVICE CENTRE | COMPAQ

Compaq is a registered trademark of Compaq Computer Australia Pty. Limited and company names are the property of their respective owners. Prices may vary between locations and change without notice. COM3504/APC

HARRIS TECHNOLOGY

A member of the Coles Myer Ltd. group

Computer Stop-Press

The Latest Source on the Newest Products

APRIL 2001

Web Direct

Each page has a hot Weblink address direct to "Stop-Press" latest information and pricing

TOSHIBA Satelite 1730CDT Affordable High Performance Notebook. Page 4

COMPAQ Microportable Projectors The Perfect *Extension to Your* Portable PC. Page 9



NETGEAR
FR314 Firewall Router. Page 31

CRYSTAL DECISIONS
NEW VERSION: Crystal Reports 8.5. Page 52

MICROGRAFX
NEW VERSION: Flowcharter Professional 2000. Page 57

SYMANTEC
NEW VERSION: pcAnywhere v10.0.
NEW PRODUCT: NAV Small Business Solutions for 10 users. Page 60

ADOBE We use Adobe PageMaker, PhotoShop & Illustrator for the production of this catalogue. Pages 54 & 55

hp invent

HP LaserJet 4100 Printer



1: Contol Panel
2: Embedded Web Server
3: Multipurpose Tray
4: 500-sheet Paper Tray

LaserJet 4100 (base unit) RENT* $23.88

(B8399) GST INC **$2,179**

Page 44

HOT NEW PRODUCT

Web Direct www.ht.com.au/cat/hp

RENTSMART

*The figures quoted are based on a per week basis over 3 years. To approved persons, Terms & Conditions apply.

Sales 1300 13 9999 Website www.ht.com.au
Fax 1300 13 6666 E-mail sales@ht.com.au

SAVE MONEY! Compare our prices

HARRIS TECHNOLOGY

ht.com.au.Pty. Ltd. ABN: 74-007-870-484
A member of the Coles Myer Ltd. group
www.ht.com.au

Index

PCs/Notebooks/Servers
Toshiba Notebooks 4-7
Compaq Computers 8-10
HP Servers/Networking 11
HP Desktops 12
Compucon 14-15
Quantum SnapServer 19
Sony 23
Casio 25
Palm Computers 26-27
Rental
Rentsmart 16
Mice, Keyboards
Logitech 37
Microsoft Hardware 39
Back-up & Networking
Perle 13
APC 17
Comsol Cables 21
Jackson 28
Dlink 29
Netgear 30-31
Modems/Fax Machines
3Com 32
Netcomm 38
Dynalink Modems 39
Storage
Digital Tape 18
Optistor/SCSI 20
Eiger 28
Iomega 33
Verbatim 34-36
HP CDRW 43
Pioneer 48
Imation 50
Veritas 59
Add-on Cards
New Magic 49
Matrox 50
Pinnacle Systems 51
Monitors & Multimedia
Sony 22
Kodak 24
Intel Cameras 40
Printers, Scanners
AGFA 41
HP DeskJets 42
HP ScanJets 42
HP OfficeJets 43
HP LaserJets 44-45
HP InkJets 45
Canon 46
Fuji Xerox 47
Software Applications
Microsoft Windows 3
Crystal Decisions 52
DTMS 53
Pixel 53
Adobe 54-55
Macromedia 56
Micrografx 57
Autodesk 58
Interact 59
Symantec 60
Computer Associates 61
MSDN 62
Microsoft Open Licence 63
Microsoft Office 64

Catalogue valid from 01/04/01 to 30/04/01

Showroom and Store Locations

HQ - North Ryde

Open 7am - 7pm Monday - Friday
9am - 4pm Saturday & Sunday

45 Epping Road, Cnr Epping & Wicks Rd
North Ryde, NSW 2113 (Close to Microsoft)

Sales:
(02) 8879 5095
Showroom:
(02) 8879 5130
Reception:
(02) 8879 5000
Fax:
(02) 8879 4000



North Sydney

Open 9am - 5:30pm Monday - Friday
9am - 4pm Saturday & Sunday

Ground floor, Bayer Building, 275 Alfred St
Nth, Nth Sydney,
NSW 2060

Showroom:
(02) 8879 5135
Cust.Service:
(02) 8879 5140
Fax:
(02) 8879 5137



Melbourne

Open 9am - 5:30pm Monday - Friday
9am - 4pm Saturday & Sunday





212 Hoddle St
Abbotsford
VIC 3067

Sales:
(03) 9418 4100
Fax:
(03) 9418 4105

World Wide Web

www.ht.com.au

- ☑ *Pricing*
- ☑ *Product Information*
- ☑ *Stock availability*
- ☑ *Your order status*
- ☑ *E-mail or fax for information*
- ☑ *Fast & Friendly Customer Service!*



HARRIS TECHNOLOGY @ Kmart

HARRIS TECHNOLOGY @ Target.

BROADWAY: Broadway Shopping Centre, Cnr Bay & Grose Streets NSW 2007 **Ph: (02) 9219 7319**

BURWOOD: Cnr Burwood Highway & Blackburn Rd, VIC 3151 **Ph: (03) 9210 0732**

BALLARAT EAST: Doveton St South, VIC 3350 **Ph: (03) 5327 4050**

CAMBERWELL: Station St, VIC 3124 **Ph: (03) 9934 6600**

Kmart and Target Shoppers! Not all products are in-store, but consulting & advice available on all items

Ordering



For all locations:
Phone, fax, drop into one of our locations or order online through our website.

Contact Details

Sales	**1300 13 9999**
Facsimile	**1300 13 6666**
Email	**info@ht.com.au**
Customer Service	**1300 13 8888**
Main Reception	**1300 13 5555**



Delivery



We deliver Australia Wide!

Delivery times quoted by sales staff are our best estimates based on information received from the manufacturers. These estimates are offered as a guide only.

Under **3Kg**:	**$10.00**
3Kg - 10Kg (e.g printer):	**$17.00**
Over **10Kg** (e.g. system):	**$33.00**

COLES MYER SHAREHOLDERS:

receive 3% discount on most products, but specifically not on:
- Toshiba, IBM & Sony Notebooks & options - Microsoft products bought under the ECEMPP employee purchase program.

Fly Buys.

You can collect **Fly Buys** points when you present your card for each purchase at Harris Technology. ***Look out for bonus offers in this catalogue.*** Collect 1 standard point for every $5 spent.

Businesses registered for GST may be entitled to claim an input tax credit for the GST which they have paid on purchases of goods which are to be used in their business. For more information please contact the ATO or your taxation adviser.

All items in this publication have been included in good faith on the basis that the goods, as described, will be available at the time of sale. A failure by supplier to deliver in accordance with sample, description or at all or other unintentional causes may result in some lines being unavailable. Display accessories shown in photographs throughout this publication are not included in the price. Whilst every care has been taken to ensure accuracy in this catalogue, we reserve the right to change incorrect prices resulting from a printing or typographical error.

Phone, Fax, Email, Web - Open 7 Days...

Centenary of Federation

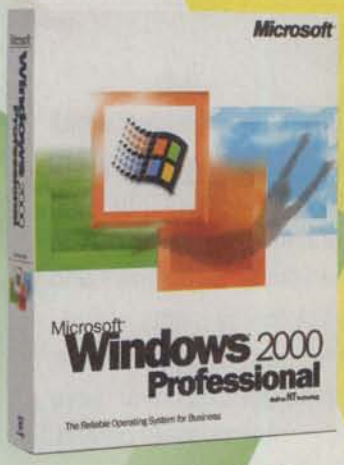
Microsoft®

Check for latest prices & products!

Web Direct www.ht.com.au/cat/microsoft

Better Living in the Digital World

Windows® 2000 Professional



Microsoft Operating System for Business: The next generation of NT workstation for the desktop. Built on Windows NT® technology and an easy-to-use, familiar Windows® 98 user interface, Windows 2000 Professional makes business users more productive. Its integrated Web capabilities and broad support for mobile computers and hardware devices makes Windows 2000 the easy way for business users to connect to the Internet anywhere and anytime. And its rock-solid reliability and improved manageability simplify desktop management for IT Professionals.

- The best way to Internet-enable your business using integrated Web application services, increased scalability and industry-standard security.
- A more reliable platform designed for increased system uptime.
- A more manageable operating system to lower desktop management costs.
- Will enable knowledge workers to be more productive and take advantage of new devices.

Version Upgrade from Windows NT WorkStation (88594) GST INC: **$278**

Product Upgrade fromWindows 95/98 (88593) GST INC: **$409**

Full Version (88592) GST INC: **$585**

Microsoft® Open License
SEE PAGE 63
FOR VOLUME DISCOUNTS!

Microsoft® Office 2000
SEE PAGE 64
FOR MORE INFORMATION









Microsoft Windows Me Millennium Edition

For Home

The Best in Digital Media
Improved User Experience
Enhanced Home Networking

Microsoft Windows 2000

For Business

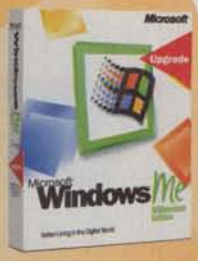
Internet Enable your Business
Reliable, Manageable
Best for New Business Devices

Windows® Millenium Edition

The new Microsoft Operating System for home use

- *System Restores* lets you easily return your system to a working state in the event of a significant problem, so you can quickly get back to using your PC.
- With *Windows Image Acquisition*, you can easily import photos from scanners and cameras. No extra software is required to perform simple operations like previewing, rotating and printing.
- *Microsoft Movie Maker* gives you the power to create, edit and share movies over the Internet.
- *Windows Me* includes built-in safeguards that help prevent you (or applications) from deleting or overwriting key system files.
- Internet Explorer 5.5 provides the richest online experience with easy search capabilities, faster browsing and easier printing.
- *Windows Me* is ready for home networking. You can easily set up a home network through your PC, and share printers, Internet connections and other devices.

Windows® Millenium Edition Upgrade
(A3687) GST INC:
*$165





Windows® Millenium Edition Full Version
(A3686) GST INC:
*$319

* No further discounts apply

APR 3

Sales:	**1300 13 9999**	**Website:**	**www.ht.com.au**	**Order On-line**
Fax:	**1300 13 6666**	**E-mail:**	**sales@ht.com.au**	**www.ht.com.au**

TOSHIBA

Web Direct www.ht.com.au/cat/toshiba

Affordable high performance

Ask about...

EXTENDED HARRIS TECHNOLOGY WARRANTY

- ☐ Extend to a total of 3 Years Return to Base
- ☐ Extend to a total of 5 Years Return to Base
- ☐ Upgrade Return to Base of Warranty Extension to On-Site

NO FURTHER DISCOUNTS AVAILABLE ON...

ALL TOSHIBA NOTEBOOKS AND ACCESSORIES SOLD FROM HARRIS TECHNOLOGY.

HARRIS TECHNOLOGY. @ Target.

Ballarat (VIC), Camberwell (VIC) & Epping (VIC)

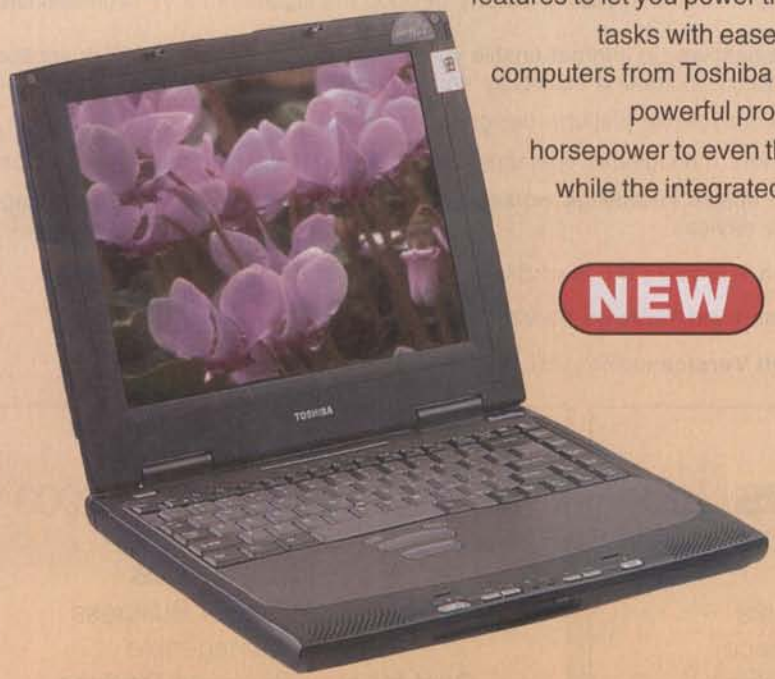
Target Shoppers!

Not all products are in-store, but consulting & advice available on all items

APR 4

Satellite 1730CDT

The Satellite Series gives you the best of both worlds - power and affordability. The ideal small business or home office mobile computer, every Satellite is built with just the right mix of features to let you power through the day-to-day computing tasks with ease. The Satellite range of notebook computers from Toshiba all contain colourful displays and powerful processors to provide plenty of CPU horsepower to even the most demanding applications, while the integrated multimedia devices never leave functionality behind.



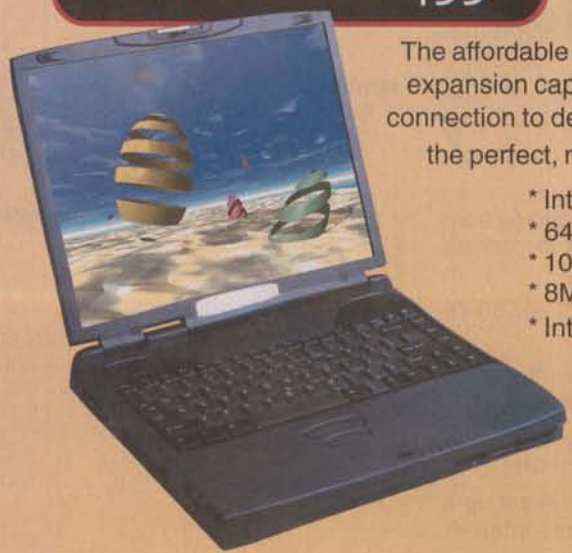
NEW

* Intel Celeron 650MHz
* 64Mb / 320Mb SDRAM
* 10 Gb HDD
* Internal Modem 56K
* 13.3"TFT
* CD Drive
* Windows Me

(B8623) GST INC **$3,049**

Rent for $29.90

Satellite Pro 4330



The affordable high performance mobile computer. With a range of expansion capabilities, including optional Port Replicator for easy connection to desktop peripherals and accessories, Satellite Pro is the perfect, no-compromise solution for business professionals.

* Intel Celeron 650MHz
* 64Mb / 320Mb SDRAM
* 10Gb HDD
* 8MB Video Ram
* Internal Modem 56K
* 14.1"TFT
* CD Drive
* Windows 98 SE
* RCA Out

With Windows 95/98

(B6192) GST INC **$3,475**

Rent for $34.08

With Windows 2000/NT

(B6230) GST INC **$3,665**

Rent for $35.94

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

bankcard MasterCard VISA efpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval.

TOSHIBA

Web Direct www.ht.com.au/cat/toshiba

Compare Satellite Pro Models

Satellite Pro 4600

The Satellite Pro 4600 puts the latest performance, multimedia, storage and display technologies within reach. With a number of configurations to choose from, the Satellite Pro Series lets you pick and choose which technologies are right for you.

* Pentium III SpeedStep 650MHz
* 64Mb / 512Mb SDRAM
*10GB EIDE HDD
*10/100 BaseTX Ethernet
*56K V.90 Data & fax modem
* Int 8X DVD-ROM
*14.1" TFT display
* Windows 98 Second Edition



(B6271) GST Inc **$4,588**

Rent for $42.88

Satellite Pro 4600 Range

	Satellite Pro 4600-650	Satellite Pro 4600-700	Satellite Pro 4600-800
Processor	Pentium III 650MHz	Pentium III 700MHz	Pentium III 800MHz
RAM Std/Max	64/512 MB	128/512 MB	128/512 MB
Hard Disk	10GB	20GB	20GB
Monitor	14.1" TFT	14.1" TFT	15" TFT
CD-ROM	DVD	DVD	DVD
Mic & Spkr	Yes	Yes	Yes
Port replicator	Optional	Optional	Optional
Video Ram	16Mb	16Mb	16Mb
DVD capable	Inc 8xDVD	Inc 8xDVD	Inc 8xDVD
Weight	3.17 kg	3.17 kg	3.17 kg
Warranty	1 Year	1 Year	1 Year
56K V.90 & 10/100 LAN	Yes	Yes	Yes
RENT*	**$42.88** (B6271)	**$45.42** (B6297)	**$52.75** (B7977)
GST INC	**$4,588**	**$4,860**	**$5,787**
RENT*	**$44.63** (B6287)	**$47.01** (B6311)	**$54.46** (B7978)
GST INC	**$4,776**	**$5,158**	**$5,975**

HARRIS TECHNOLOGY

Appology

Sorry for any inconvenience caused by the typographical errors created in the March 2001 edition of the Catalogue...

- Page 4 – Part # 94185 should be $4,915,
- Page 5 – Part # A2839 should be $4,915
- Page 7 – Part # A2854 should be $2,995

NO FURTHER DISCOUNTS AVAILABLE ON...

ALL TOSHIBA NOTEBOOKS AND ACCESSORIES SOLD FROM **HARRIS TECHNOLOGY**

RENTSMART

SEE PAGE 16 FOR MORE DETAILS

The figures quoted are based on a per week basis over 3 years. To approved persons, Terms and Conditions apply.

Sales: 1300 13 9999
Fax: 1300 13 6666
Website: www.ht.com.au
E-mail: sales@ht.com.au

Do you want Fly Buys with that?

TOSHIBA

Web Direct www.ht.com.au/cat/toshiba

Compare Tecra Models

TOSHIBA ACCESSORIES

TOSHIBA Battery Charger For for Tecra (90056) GST INC **$514**

TOSHIBA A4 Leather Bag (68408) GST INC **$229**

TOSHIBA USB 18-key Numeric Pad For Satelite Series (A3773) GST INC **$95**

TOSHIBA Universal AC Adapter For Tecra 8000/Satellite 4000/4010 & others (44200) GST INC **$110**

NO FURTHER DISCOUNTS AVAILABLE ON...

ALL TOSHIBA NOTEBOOKS AND ACCESSORIES SOLD FROM HARRIS TECHNOLOGY.

Appology

Sorry for any inconvenience caused by the typographical errors created in the March 2001 edition of the Catalogue...

- Page 4 – Part # 94185 should be $4,915,
- Page 5 – Part # A2839 should be $4,915
- Page 7 – Part # A2854 should be $2,995

Tecra 8200

Processor	Pentium III 850MHzSS*	Pentium III 1GHzSS*
RAM Std/Max	128 MB	256 MB
Hard Disk	20GB	20GB
Screen	14.1" TFT	14.1" TFT
CD-ROM	24x CD-ROM	CDRW
Mic & Spkr	Speakers	Speakers
Port replicator	Optional	Optional
Select bay	Yes	Yes
DVD capable	8 x DVD	8 x DVD
Weight	2.8 kg	2.8 kg
Warranty	3 Years	3 Years
56K V.90 modem	Yes	Yes
Ethernet 10/100 LAN	Yes	Yes/ Wireless
RENT*	**$67.67**	**$85.29**
GST INC With Windows 95/98	**$7,799** (B8636)	**$9,989** (B8638)
RENT*	**$69.39**	**$87.08**
GST INC With Windows 2000/NT4	**$7,998** (B8637)	**$10,199** (B8639)

NEW



- **Pentium III 850MHz SS**
- **14.1" TFT**
- **128MB RAM**
- **20GB HDD**
- **8 x DVD**
- **3 Year Warranty**

(B8636) GST INC

$7,799

Rent for $67.67

Tecra 8100

Processor	Pentium III 700MHzSS*	Pentium III 750MHzSS*
RAM Std/Max	128 MB	128 MB
Hard Disk	12GB	20GB
Screen	14.1" TFT	14.1" TFT
CD-ROM	24x CD-ROM	24x CD-ROM
Mic & Spkr	Speakers	Speakers
Port replicator	Optional	Optional
Select bay	Yes	Yes
DVD capable	6 x DVD	6 x DVD
Weight	2.8 kg	2.8 kg
Warranty	3 Years	3 Years
56K V.90 modem	Yes	Yes
RENT*	**$51.91**	**$56.90**
GST INC With Windows 95/98	**$5,695** (A2868)	**$6,539** (A2863)
RENT*	**$54.12**	**$58.38**
GST INC With Windows 2000/NT4	**$5,938** (A2869)	**$6,729** (A2864)



Styled for consistant mobile performance, the Tecra 8100 series provides you with the ultimate combination of traditional Tecra investment benefits, high processor performance and a new sleek look and feel.

- **Pentium III 700MHz SS**
- **14.1" TFT**
- **128MB RAM**
- **12GB HDD**
- **6 x DVD**
- **3 Year Warranty**

(A2868) GST INC

$6,090

Rent for $55.51

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval.

TOSHIBA

Web Direct www.ht.com.au/cat/toshiba

Compare Portege Models

Portege 3490CT



NEW

The Portégé® 3490CT is the ultimate statement in mobile computing with its Pentium® III power, large high resolution colour display, long battery life and easy functionality all packed into an ultra thin lightweight body finished in sleek magnesium. With head turning style and work burning performance, the Portégé® 3490CT is the perfect tool for the travelling executive ready to succeed in the new world.

	Portégé 3490CT	Portégé 7220CTe
Processor	PIII 700MHz	PIII 650MHz
RAM Std/Max	128 MB	64/192 MB
Hard Disk	20 GB	12GB
Screen	11.3" TFT	13.3" TFT
Display	1024x768	1024x768
CD-ROM	Optional	Optional
Mic & Spkr	Yes	Yes
Port replicator	Yes	Optional
Select bay	No	No
LAN	Yes	Optional
DVD capable	Yes- optional	Yes
Weight	2 kg	2 kg
Warranty	3 Years	3 Years
56K V.90 modem	Yes	Yes
RENT*	$47.03	$45.93
GST INC With Windows 95/98	$5,160 (B8629)	$4,915 (A2839)
RENT*	$49.13	$46.47
GST INC Windows 2000/NT4	$5,390 (B8695)	$5,099 (A7020)

NO FURTHER DISCOUNTS AVAILABLE ON... ALL TOSHIBA NOTEBOOKS AND ACCESSORIES SOLD FROM HT

Blue Tooth Technology

Toshiba Brings First Bluetooth PC Card Solution to Market



Toshiba's wireless solution empowers portable computer users to unplug from the restraints of conventional wired computing with a fully integrated Bluetooth PC Card, complete with SPANworks productivity software. Using short-range wireless radio communication, Bluetooth technology facilitates fast and secure transmission of both voice and data at speeds of up to 1 Mbit/s, which is up to 20 times faster than a standard V.90 modem connection. Utilising this revolutionary wireless technology, Toshiba's Bluetooth PC Card can be used to connect portable computers, printers, digital mobile phones, PDAs, digital cameras, network access points and other mobile devices to one another and connect to the Internet or a LAN without the need for wires or cables.

(B6572) GST Inc **$339**

TOSHIBA ACCESSORIES

TOSHIBA Slimline Battery Packs
Portege 7140/ 7220Cte (92963) GST INC **$122**
For Portégé 3010/3020 (Lithium Ion) (73665) GST INC **$119**
For Satellite 4000 Series (72109) GST INC **$100**
For Tecra 8000 (Lithium Ion) (29358) GST INC **$250**

TOSHIBA High Capacity Battery Packs
For Portégé 3010/3020 (72475) GST INC **$230**
For Portégé 7000/7020 (66479) GST INC **$278**

TOSHIBA Battery Charger
For Tecra 8000 (29357) GST INC **$185**

TOSHIBA Universal AC Adapter
For Tecra 8000/ Satellite 4000/4010 & others (44200) GST INC **$101**

RENTSMART

The figures quoted are based on a per week basis over 3 years. To approved persons, Terms and Conditions apply.

APR 7

Sales: 1300 13 9999 **Fax:** 1300 13 6666 **Website:** www.ht.com.au **E-mail:** sales@ht.com.au **Delivery** Australia-Wide

COMPAQ

Web Direct www.ht.com.au/cat/compaq

Freedom to Think

Technology Partner COMPAQ
HARRIS TECHNOLOGY™
for all your computer needs!



HARRIS TECHNOLOGY™
for all your computer needs!

RENTSMART

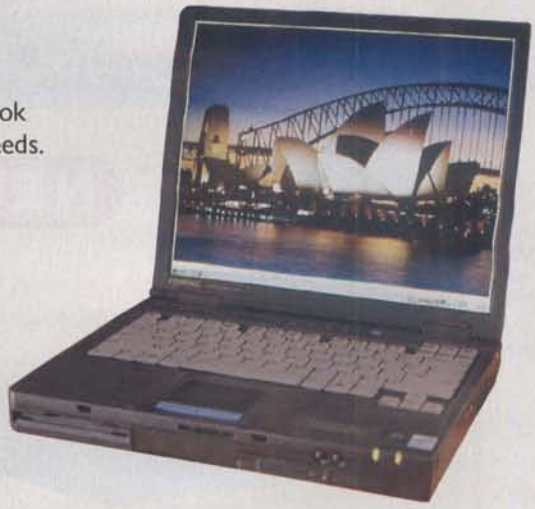
SEE PAGE 16

FOR MORE DETAILS

The figures quoted are based on a per week basis over 3 years. To approved persons. Terms and Conditions apply.

APR 8

ARMADA E500 NOTEBOOK

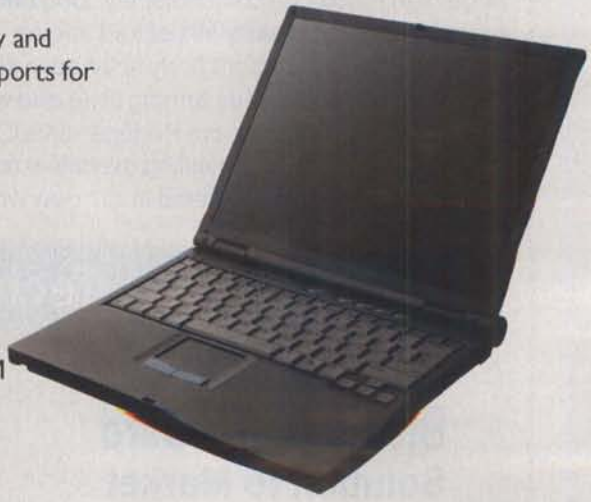


Value, expandability and performance, the Armada E500 notebook provides the all-in-one solution that will meet your individual needs.

- Mobile Intel Celeron 700MHz processor
- 13.3" Colour TFT XGA display
- 64MB SDRAM
- 10GB Hard Disk Drive
- Removeable Diskette Drive
- 24X Max CD-ROM
- Integrated modem and 10/100 ethernet
- Microsoft Windows 98 SE

(B8682) GST Inc **$Call**

ARMADA M300 NOTEBOOK



This power-packed ultraportable offers exceptional mobility and expandability for its size, with a full set of on-board system ports for the most demanding mobile user.

- Mobile Intel Pentium III 600MHz processor
- 12.1" Colour TFT XGA display
- 64MB SDRAM
- 12GB Hard Disk Drive
- External Diskette Drive
- Integrated modem and 10/100 ethernet
- Optional Mobile Expansion Unit with CD or DVD-ROM
- Microsoft Windows 98 SE

(A4237) GST Inc **$4,469**

RentSmart $41.76 / week

ARMADA M700 NOTEBOOK



For exceptional performance in a thin and light form factor, the Armada M700 notebook has all the power you need.

- Mobile Intel Pentium III 800MHz processor
- 14.1" Colour TFT XGA display
- 128MB SDRAM
- 20GB Hard Disk Drive
- 8X DVD-ROM
- Integrated modem and 10/100 ethernet
- Microsoft Windows 98 SE
- 3 year pick-up warranty with 48-hour service workshop turnaround repair time

(B3809) GST Inc **$7,085**

RentSmart $61.47 / week

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval.

COMPAQ

Check for latest prices & products!

Web Direct www.ht.com.au/cat/compaq

Freedom to Move



WORK WHERE YOU CHOOSE TO WITH A COMPAQ iPAQ POCKET PC



Ask about... EXTENDED HARRIS TECHNOLOGY WARRANTY

	COMPAQ iPAQ POCKET PC H3130 MONO UNIT	COMPAQ iPAQ POCKET PC H3630 COLOUR UNIT
Platform	Windows™-powered Pocket PC	Windows™-powered Pocket PC
Processor	206 MHz Intel™ StrongARM™ SA-1110 32-bit RISC processor	206 MHz Intel™ StrongARM™ SA-1110 32-bit RISC processor
Viewable Image Size	59.6 mm wide x 78.8 mm tall (96.5 mm diagonal)	59.6 mm wide x 78.8 mm tall (96.5 mm diagonal)
Display	15 gray-scale semi-transmissive STN (supertwist pneumatic) LCD touch-screen display	Super bright 12-bit TFT display with 4,096 colours and reflective technology
Memory	16 MB RAM, 16 MB Flash ROM	32 MB RAM, 16 MB Flash ROM
Input Method	Handwriting recognition, soft key-board, voice recorder, inking	Handwriting recognition, soft key-board, voice recorder, inking
Front Panel	5 buttons: on/off/backlight button and four customizable application buttons, with five-way joystick	5 buttons: on/off/backlight button and four customizable application buttons, with five-way joystick
Battery	950 mAh Lithium Polymer with up to 14-hour battery life	950 mAh Lithium Polymer with up to 10-hour battery life
Dimensions	130mm height x 83.5mm width x 15.9mm depth	130mm height x 83.5mm width x 15.9mm depth
Weight	163.5 grams, including battery	170 grams, including battery
Part # & Price: **RentSmart**	(B4505) GST Inc: **$774** **$8.48 / week**	(A3737) GST Inc: **$1,095** **$12.00 / week**

Technology Partner COMPAQ

HARRIS TECHNOLOGY™ for all your computer needs!

COMPAQ'S MICROPORTABLE PROJECTORS

The perfect extension to your portable PC, Compaq's microprojectors are ideal for creating a big impression. Compaq delivers a range of powerful and innovative microportable projector solutions perfect for the mobile professional on the road or in the office. Whether your needs dictate the fully featured MP2800, or the affordable MP1400, you will get the reliability, quality and convenience you need for powerful presentations on the move.

COMPAQ MP1400

- 800 x 600 SVGA native display resolution and auto scales up to SXGA and Macintosh resolutions
- Increased light output of 700 ANSI lumens
- On-screen menu or adjusting tint, brightness, colour and many more image settings
- Operating noise less than 40 decibels
- Optional remote control/multimedia adapter with 8W Premier Sound speaker and video plug of VCR, DVD and camcorder inputs
- Only 1.9kgs
- 2 year warranty



RentSmart $53.68 / week
(A5430) GST Inc **$5,890**

COMPAQ MP2800 – NEW!

- 1024 x 768 XGA display resolution
- Increased light output of 1000 ANSI lumens
- On-screen menu or adjusting tint, brightness, colour, keystoning and many more image settings.
- Remote control/multimedia adapter with 8W
- Premier Sound speaker and video plug or VCR, DVD and camcorder inputs, USB port, DVI connector
- Operating noise levels less than 40 decibels
- Integrated zoom lens
- One of the world's smallest projectors weighing only 1.36kgs
- 2 year warranty



RentSmart $79.87 / week
(B8669) GST Inc **$9,355**

HARRIS TECHNOLOGY™ @ Target.

Ballarat (VIC), Camberwell (VIC) & Epping (VIC)

Target Shoppers!
Not all products are in-store, but consulting & advice available on all items

APR 9

Sales: 1300 13 9999
Fax: 1300 13 6666
Website: www.ht.com.au
E-mail: sales@ht.com.au

Visit our HT@Kmart Kiosks! See Page 2

COMPAQ

Check for latest prices & products!
Web Direct www.ht.com.au/cat/compaq

iPAQ Desktop & Servers

Ask about...

EXTENDED HARRIS TECHNOLOGY WARRANTY

- ☐ Extend to a total of 3 Years Return to Base
- ☐ Extend to a total of 5 Years Return to Base
- ☐ Upgrade Return to Base of Warranty Extension to On-Site

RENTSMART

SEE PAGE 16 FOR MORE DETAILS

The figures quoted are based on a per week basis over 3 years. To approved persons, Terms and Conditions apply.

Technology Partner COMPAQ

HARRIS TECHNOLOGY™ for all your computer needs!

APR 10

The very latest Compaq iPAQ Desktop is a flexible and innovative business tool.

New technology features are combined in its compact, sleek design;and it delivers new levels of product security. It is not only affordable to buy but also to run. Although sophisticated in its capabilities, the Compaq iPAQ has been created to deliver an unprecedented level of PC modularity.

- Improved security, speed and modular design
- A simple choice of configurations
- Full, network-ready PC functionality
- Flexible multibay for drive swapping
- Easy deployment, manageability and minimal complexity
- Choice of Intel Celeron and Pentium III processors
- Local build, International break-through Design

Entry Level Specifications:

- Intel Celeron 700MHz Processor
- 64MB 133MHz SDRAM
- Integrated Intel 3D Graphics
- 10GB Ultra ATA 100 Hard Drive
- Integrated AC97 audio
- Integrated Intel Network Card
- Compaq Carbon Scroll Mouse
- Compaq Carbon Easy Access Keyboard
- Microsoft Windows Me

OTHER CONFIGURATIONS ALSO AVAILABLE!!!

(B8286) GST Inc: **from**

$1,095

RentSmart $12.00 / week



THE WORLD'S MOST POPULAR SERVERS ARE NOW AVAILABLE AT SMALL BUSINESS PRICES.

ProLiant ML 330

The perfect frist server for a business!

- Delivers easy-to-manage file, print and Internet sharing
- Intel Pentium III 733MHz processor with 133MHz front side bus
- 64MB ECC SD RAM (expandable to 2GB)
- 9.1GB Wide-Ultra SCSI hard drive (hold up to 5 drives)
- 6 available PCI expansion slots
- Includes network controller, video card and renown insight manager software
- 3 year on site, next business day Compaq warranty



(A4913) GST Inc

$2,805

RentSmart $27.51 / week

ProLiant ML 350

The affordable Server which offers the latest Technology and room to grow!

- Ensures constant uptime for your business with hot-plug options
- Dual capable Intel Pentium III 866MHz processor with 133MHz front side bus
- 128 MB ECC SDRAM (expandable to 2 GB)
- 9.1GB Wide-Ultra SCSI hard drive (expandable up to 218GB)
- 6 available PCI expansion slots
- Includes network controller, video card and renown insight manager software
- 3 year on site, next business day Compaq warranty



(A4137) GST Inc

$3,820

RentSmart $37.46 / week

The smart servers for business. Built-in pre-failure warranty on hard drives, processors, and memory mean the server detects any failing parts before your server goes down. Compaq will then immediately ship the parts required for your piece of mind.

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval.

hp invent

Delivery Australia-Wide

Web Direct www.ht.com.au/cat/hp

HP Networks & Servers

NEXT BUSINESS DAY ADVANCE REPLACEMENT - LIFETIME WARRANTY
****PLEASE NOTE THAT PRICES ARE SUBJECT TO CHANGE ON ALL PRODUCTS****

HP ProCurve Switch 2512 & 2524



9.6GBPS BACKPLANE & AUTO-MDI/-X! • Lowest Price 10/100 Managed Switch • Provides a rich, layer 2 feature set • Includes 2 built-in gigabit transceiver slots • Auto MDI/-X on all 10/100 and 100/1000 ports • Lifetime warranty for as long as you own the product • Wire-speed performance on all ports • FREE HP TopTools Management Software included

2512 (12 port managed switch)
(A9703) GST Inc: **$1,595**

2524 (24 port managed switch)
(B0062) GST Inc: **$2,045**

HP ProCurve Switch 2312 & 2324

HOT NEW PRODUCT



Ideal for low-cost, unmanaged 10/100 connectivity • Lowest Price 10/100 Switch • Includes 2 Built-in Gigabit transceiver slots • Brings 10/100/1000 solutions to the market • Media-flexible ports for uplinks and server connections • HP quality, functionality and performance • Plug and play solution

2312 (12 port unmanaged switch)
(B0063) GST Inc: **$805**

2324 (24 port unmanaged switch)
(B0064) GST Inc: **$1,155**

HP ProCurve Switch Modules

HOT NEW PRODUCT

HP ProCurve Switch Gigabit Stacking Kit
(78306) GST INC: **$375**

HP ProCurve Gigabit-SX Transceiver
(82140) GST INC: **$1,098**

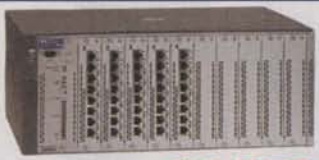
HP ProCurve Gigabit-LX Transceiver
(82141) GST INC: **$1,770**

HP ProCurve100/1000-T Transceiver
(A9127) GST INC: **$789**

HP ProCurve 100-FX SC Transceiver
(A9128) GST INC: **$659**

HP ProCurve Switch 4000m

HP's 40 port managed 10/100/Gigabit switch provides a scalable low cost switching solution for organisations looking for scalable, expandable, low-cost migration to 10/100/Gigabit. • High speed/media-flexible uplinks including 10/100Base-T,Gigabit-SX, LX, and 1000Base-T. • Switch meshing = high availability with high performance • Stacking capability with single IP address management.



(66063) GST INC: **$4,579**

HP NETSERVER E-200

The Server with the best price/performance value for small businesses.

Starts your small business off on the right Track. The HP NetServer E200 offers the best value-to-performance ratio of any major server supplier.

A desktop PC may do the job when you are starting out, but as your small business expands, it quickly out grows the ability to cut corners on something as fundamental as a server. And with the HP NetServer E200 HP leads the top tier server suppliers offering full server grade technology, functionality and performance for the price of a PC.

- Intel PIII800 MHz processor with 133MHz front size bus
- 64MB registered ECC RAM standard (expandable to 768)
- 9.1GB, 7200rpm, 68-pin Ultra Wide SCSI HDD
- Four PCI, one ISA
- Integrated HP NetServer 10/100TX LAN adapter



(B1564) GST INC: **$2,479**

Rent 3 yrs - $24.31 per week* Call for long term *rental pricing

HP ProCurve Switch 408



Unmanaged 8 port 10/100 switch in a compact sized package. This switch offers half/full duplex, 10/100 autosensing on every port. Warranty: Lifetime, Exchange Next Day (79125) GST INC: **$329**



HARRIS TECHNOLOGY. for all your computer needs!

All systems include: 7 mass storage shelves (4 available after floppy, CD-ROM & 9GB disc), 5 expansion slots (4 PCI, 1 ISA combination), integrated 10/100 network interface, and easy set up CD.

APR 11

Sales: 1300 13 9999
Fax: 1300 13 6666
Website: www.ht.com.au
E-mail: sales@ht.com.au

Visit our HT@Target Kiosks! See Page 2

hp invent

Fast delivery Australia wide

Check for latest prices & products!

Web Direct www.ht.com.au/cat/hp

HP Desktops

HP e-pc

HOT NEW PRODUCT





Storage

Removable, generously proportioned hard disk drive for all user needs.



Connectivity

Lockable USB, serial, parallel, PS/2 and LAN ports to fit your computing environment.

Ultra-small, ultra-smart

The revolutionary e-Vectra measures only 9.5 inches (24 cm) high.





Power

Powerful Intel Pentium III and Celeron processor configurations and generous RAM to suit any business application.



Media Choice

Fast, slim CD and media-free models.

Microsoft

Operating Systems

Choose from a range of Microsoft operating systems including Windows 2000 to match your corporate standard.



e-Diagnostics

The intelligent eDiagTools technology allows instant problem identification and web-enabled notification to HP or your support staff.

Processor:	hp e-pc C700	hp e-pc C700	hp e-pc PIII 866	hp e-pc PIII 866
SDRAM	64MB	128MB	128MB	128MB
Hard Disk	20G	20G	20G	20G
FDD	optional	optional	optional	optional
Monitor	no	no	no	no
CD - ROM	no	24x	24x	24x
OS	Windows '98	Windows '98	Windows 2000	Windows '98
Modem	Yes	Yes	Yes	Yes
Software	Word 2000	Word 2000	Word 2000	Word 2000
Part No.:	(B8730)	(B8731)	(B8732)	(B8733)
GST INC:	**$1,458**	**$1,645**	**$2,180**	**$1,998**
Rental:	$15.98	$18.03	$23.89	$21.90

PLEASE NOTE THAT PRICING IS SUBJECT TO CHANGE - CHECK OUR WEB DIRECT LINK FOR THE LATEST PRICES, INFORMATION & AVAILABILITY

Accredited Workgroup Reseller
HEWLETT PACKARD

RENTSMART

SEE PAGE 16

FOR MORE DETAILS

The figures quoted are based on a per week basis over 3 years. To approved persons, Terms and Conditions apply.

HARRIS TECHNOLOGY @ Kmart

Broadway (Sydney)
Burwood (Melbourne)

Kmart Shoppers!

Not all products are in-store, but consulting & advice available on all items

APR 12

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval.

perle

Web Direct www.ht.com.au/cat/perle

Essential Network Connectivity

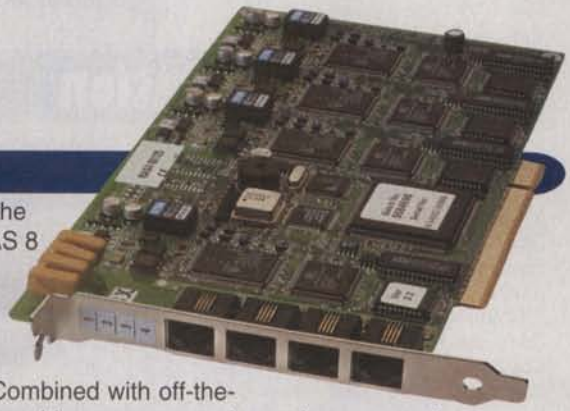
perle PCI RAS

High Performance 4 or 8 line 'Plug &Play' Multi-modem Cards

The PCI-RAS 4

is a four modem PCI adapter card. Utilizing the latest V.90 56K modem technology, Perle's proven multiport hardware and drivers with the convenience and speed of the PCI bus, high speed Internet access, faxing and voice mail all possible in one complete, easy to install solution. Provides a secure and seamless connection enabling remote users to interact on-line with you by remote login, by file transfer or by remote network connection.

(B8666) GST Inc **$1,294**



The PCI-RAS 8

is an eight modem PCI adapter card. Utilizing the latest V.90 56K modem technology, the PCI-RAS 8 offers high speed Internet access, faxing and voice mail support. Perle's proven multiport modem hardware and drivers combine with the convenience and speed of the PCI bus, to deliver one complete, easy to install solution. Combined with off-the-shelf remote access software, the PCI-RAS 8 provides a secure and seamless connection enabling remote users to interact on-line with you by remote login, by file transfer or by remote network connection. Multiple cards may be installed in the one PC server, allowing implementation of sizeable modem banks.

(B8667) GST Inc **$2,498**

perle 833IS

Integrated High- speed Remote Access Servers

The 833IS

supports up to 16 concurrent remote users, which makes it ideal for the medium-sized dial-in population. Scalability from 8-16 users comes with the addition of an expansion card, which is available with or without 56K - V.90, V.34 DSP modems. The Perle 833IS is Cisco compatible, and is available with a Cisco IOStm Style Command Line Interface which provides a familiar interface to network administrators and support staff. Adding the 833IS to a network is easy and needs no additional training.

833IS (B8668)
GST Inc **$5,065**

833 (4 PORT ETHERNET)
(77507) GST Inc **$3,189**

833AS (A0052) GST Inc **$14,085**



Wine on-line?
VINTAGE CELLARS
vintagecellars.com.au


HARRIS TECHNOLOGY
WOULD LIKE TO WISH YOU A HAPPY EASTER


HARRIS TECHNOLOGY
for all your computer needs!

APR 13

COMPUCON

Web Direct www.ht.com.au/cat/compucon

Enjoy a world of difference with Compucon

Amaze II N700 Value System

COMPUCON

- Intel Celeron 700 Mhz Cpu with 128K Cache
- MSI-6178M mATX i810 Board with CODEC video and sound
- 64MB PC133 SDRAM, 8ns
- 10.2Gb Ultra ATA 100 ST310211A Hdd
- Compucon 3401 Micro ATX Case
- Teac 1.44MB Floppy Drive
- Sony 48X IDE CD-Rom Drive
- Compucon PS2 Internet Keyboard
- Compucon PS/2 Scroll Button Mouse
- 3 Years On-Site Warranty
- Microsoft Windows
- Millenium Edition CD OEM
- Netcomm 56K Fax/Modem Internal



Software includes:
LOTUS SMARTSUITE — Millenium Edition v9:
Lotus 1-2-3, Lotus Fastsite, Lotus Word Pro, Lotus Organizer, Lotus Freelance Graphics, Lotus Approach, Lotus ScreenCam, Lotus SmartCenter

Rent 3 Yrs **$15.55** (B6795) GST Inc

$1,419
Monitor Not Included in Price

COMPUCON
15.1" LCD Flat Screen Monitor

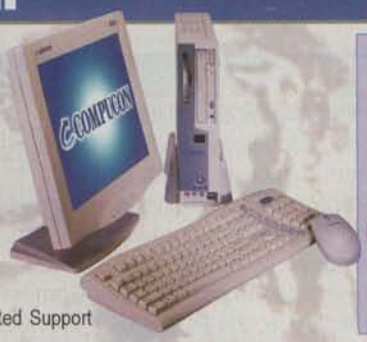


(A8436)
GST Inc
$1,549

Odyssey Ministation

COMPUCON

- Intel Celeron 700Mhz Cpu with 128K Cache
- Intel 815 Chipset Motherboard, 133Mhz FSB
- 64MB PC133 SDRAM
- 10GB Ultra ATA 100 Hard Drive
- GMCH Video with 4Mb SDRAM display cache
- Compucon Slim-line Odyssey Case with 90W PS (Dimensions of 78mm x 300mm x 320mm)
- 1.44MB Floppy Drive
- Compucon Windows 95 PS/2 Keyboard
- Compucon PS/2 Scroll Mouse
- Intel 10/100 Network Card + Wake-On-Lan
- 2x IEEE1394 High Speed Ports, TV Out, S-Video, Infra Red Support



System also includes:
- 1 x Serial, Parallel, PS/2 keyboard and mouse, 2 x USB Ports
- Integrated in ICH Software audio
- Windows Millenium Edition OEM CD
- 3 Years On-Site Warranty

Rent 3 Yrs **$17.41** (B8679) GST Inc

$1,589
Monitor Not Included in Price

HARRIS TECHNOLOGY
Appology
Sorry for any inconvenience caused by the typographical errors created in the March 2001 edition of the Catalogue...
• Page 10 – Part # B6795 of $1,149 should be $1,419

Atlantis Gaming Machine

COMPUCON

- AMD AthlonThunderbird Socket A 1000Mhz 200Mhz FSB CPU
- MSI-6340 FC-PGA VIA Chipset mATX MotherBoard 133Mhz FSB
- 256MB PC133 SDRAM 168Pin
- 20.4GB IDE Ultra ATA 100, 7200Rpm Hdd
- Leadtek GeForce-2 MX 256 32Mb Video Card 2X/4X AGP
- Compucon Atlantis iGrey ATX Case
- 1.44MB Floppy Drive
- 32/8X/4X IDE CD-RW drive with Software
- Compucon PS2 Multifunction Internet Keyboard
- Compucon PS/2 Scroll Button Mouse
- Creative SoundBlaster Live Value Sound Card
- Netcomm 56K Fax/Modem Internal



Games Software includes:
Age Of Empires II (The Age o fKings), Midtown Madness 2, Microsoft Golf 2001 Edition
Plus:
Microsoft Windows Millenium Edition CD



Rent 3 Yrs **$27.35** (B6794) GST Inc

$2,789
Monitor Not Included in Price

Ask about...



- ☐ Extend to a total of 3 Years Return to Base
- ☐ Extend to a total of 5 Years Return to Base
- ☐ Upgrade Return to Base of Warranty Extension to On-Site

Centaur Pentium 4

COMPUCON

- Intel Penium 4 - 1.4Ghz CPU
- Intel D850GB Motherboard, i850 chipset
- 128MB RDRAM (Rambus)
- 30GB Hard Drive, 7200RPM
- Compucon Centaur Tower Case
- 1.44 MB Floppy Drive
- Compucon Internet Keyboard
- Compucon Scroll Mouse
- SoundBlaster 128 Sound Card
- Intel 10/100 Network Card
- Windows ME on CD, Microsoft Encarta
- Microsoft Games Pack



Power of the Pentium 4!

intel inside pentium 4

Rent 3 Yrs **$43.73** (B2473) GST Inc

$4,679

APR 14

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval.

COMPUCON

Check for latest prices & products!

Web Direct www.ht.com.au/cat/compucon

Big Budget Networking at a Small Business Price

Server/Workstation + 4 Desktops + Hub

Includes the following services: Internet Information Services 5.0; Windows DNA 2000; Multi-site Hosting; Active Directory Integration; Integrated Directory Services; Support for the Latest Security Standards; Encrypting File System; Secure network communications; Routing and Remote Access Service; Virtual private networking (VPN); Dynamic DNS; Internet Connection Sharing; Delegated Administration; Microsoft Management Console; Remote Management with Terminal Services; Central-ized Desktop Management; Terminal Services; Distributed File System (DFS); Hierarchical Storage Management; Dynamic Volume Management; Backup and Recovery.

x1 Server/Workstation



PIII 866MHz
Intel(R) 815E Chipset Motherboard
256MB SDRAM
30Gb 7200rpm HDD
48x IDE CDROM
1.44MB FDD
56K Internal Modem
10/100Mbps Network Card
Centaur Server Case
Keyboard & Mouse
15" Colour CRT Monitor
Windows 2000 Server w/ 5 User Licenses + 5 Terminal Services User Licenses
*3 Year Nationwide On-site Warranty

[Run Windows-based applications on the server, and access from Windows-based Terminals through terminal emulation software. In Windows 2000, Terminal Services are up to 20 percent more scalable and have dramatically improved performance for both high and low-bandwidth connections]

Everything you need for a 5-seat network.

RENTSMART

SEE PAGE 16 FOR MORE DETAILS

The figures quoted are based on a per week basis over 3 years. To approved persons, Terms and Conditions apply.

x4 Proteus Windows-Based Terminal



Cyrix Media GXm-200GP
32Mb SDRAM
Integrated Audio & Video in 5530 with UMA architecture
10/100Mbps Ethernet Controller
16Mb DiskOnChip Storage
PS/2 x2, USB x2, Serial x2, Printer, VGA, LAN, audio x2
Dimensions 280 (W) x 240 (D) x 50 (H) mm
Keyboard & Mouse
15" Colour CRT Monitor
*3 Year Nationwide On-site Warranty

Talk to us about your installation requirements.

Web Direct

See Web Direct Link (at top of page) for more products and latest *info!*

x1 INTEL INBUSINESS SH10T8AU 8-PORT 10Mbps HUB

E/NET: 8 x 10BaseT Ethernet ports - 10Mbps network speed
CONNECTORS: RJ-45
CABLING SUPPORT: Category 3 or 5 for 10Base-T ports

*specials conditions apply in some remote areas.

(Cabling & installation not included) (B8662) GST INC: **$9,498**

APR 15

Sales:	**1300 13 9999**	**Website:**	**www.ht.com.au**	**Order on-line**
Fax:	**1300 13 6666**	**E-mail:**	**sales@ht.com.au**	**www.ht.com.au**

RENTSMART

Web Direct www.ht.com.au/cat/rentsmart

Why spend your money when you can spend ours?

RentSmart and Harris Technology are proud to introduce Australia's first online computer finance facility, available to your business at the Harris website today!

RENTSMART

Why Spend your Money when you can Spend ours?

Shop online with Harris and be approved for up to $15,000 with RentSmart finance in just minutes.

Get more than you think you can afford.

You can afford more with RentSmart through cashflow friendly monthly payments that are fully tax deductible for business purposes.

Update your equipment when you need to.

With RentSmart your business can have the latest equipment, so you're always ahead.



Here's how it works.

1. Simply shop for the equipment you need on the Harris site now.
2. Select RentSmart as your chosen payment method.
3. Complete the quick, secure online application form.
4. If you are approved with RentSmart, your RentSmart account will be automatically set up in just minutes.

RentSmart will then send you your application to sign, and your equipment will be ordered.

Remember, renting is the cost-effective solution for businesses to get the technology they need to succeed.

Check out how little RentSmart costs:

Purchase Price (GST Inclusive)	36 Mths (p/week)	24 Mths (p/week)
$1000	$10.96	$13.73
$2000	$21.92	$27.46
$3000	$29.42	$39.11
$5000	$45.57	$62.07

For further information phone

1300 855 555

RENTSMART

APR 16

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval.

APC®
AMERICAN POWER CONVERSION

Web Direct www.ht.com.au/cat/apc

Power Back Up = Power Protection

APC Smart-UPS 2U Rack Mounts®

Smart-UPS 700, 1000, and 1400 2U Rack Mounts

Network power protection to increase availability of your system. APC Smart-UPS 2U Rackmount features include longer runtime to keep your system safe and a 2U design to save your valuable rack space by 30%. Hot swapping batteries is also now faster and easier with the replacement battery chassis tray.



APC Smart-UPS **2u700** (99595) GST INC **$684**

APC Smart-UPS **2u1000** (99596) GST INC **$990**

APC Smart-UPS **2u1400** (99597) GST INC **$1,397**

FLY BUYS. 1,000 BONUS POINTS

Collect 1000 Bonus Fly Buys points when you purchase 99595, 99596 or 99597 between 20/03/01 - 30/04/01

APC Back Ups Pro® for workstations

Smart battery backup & high performance surge suppression for Windows 95 & NT PCs

• PowerChute® Plus software lets your UPS shut down your applications gracefully in the event of an extended power failure • Additional outlet for protection of printers • Audible alarms • Phone/ modem protection • User replaceable, hot swappable batteries



APC Back-UPS Pro **280si** (76636) GST INC **$250**

APC Back-UPS Pro **420si** (76637) GST INC **$350**

APC Back-UPS Pro **650si** (76638) GST INC **$470**

APC Surge Arrest- PNote Pro®



Surge Arrest 5 Strip (A0098) GST INC **$54**

An APC SurgeArrest is your guarantee that your hardware and valuable electronics are protected regardless of lightning strikes and everyday unexpected power surges. SurgeArrest also offers the best protection from line noise which can cause glitches and errors in electronic operations and computer data.

PNote Pro (99592) GST INC **$50**



The SurgeArrest Notebook Pro Surge Protector provides the mobile notebook professional with advanced AC and telephone line protection. The unique, in-line design creates a compact, lightweight surge protector that is truly portable and appropriate for use in any country throughout the world. With built-in Excess Current Detection, the Notebook Pro warns you against potential modem damage. A Velcro mounting strap and 6 ft. telephone cord eliminate the need to carry any additional accessories.



Back-Ups for PC's!

300va (56229) GST INC **$150**

500va (56230) GST INC **$205**

650va (56231) GST INC **$269**



APC Symmetra

Power Array 8kVA, exp. to 16kVA (71087) GST INC **$13,050**

So good we use it ourselves!

APR 17

Sales: 1300 13 9999
Fax: 1300 13 6666

Website: www.ht.com.au
E-mail: sales@ht.com.au

Do you want FlyBuys with that?

DIGITAL TAPE SOLUTIONS

Check for latest prices & products!

Web Direct www.ht.com.au/cat/digital

Next Generation Backup Solutions

Maxtor Storage Solutions

NEW!

MaxAttach NAS System

MaxC160: 160Gb (A2205) GST INC. **$6,650**
MaxC240: 240Gb (A9090) GST INC. **$7,969**
MaxC320: 320Gb (B2051) GST INC. **$9,175**

Simplest way to add a File Server to any NT or Unix Network.



- Simply plug into your ethernet
- Only 5 mouse clicks to install....
- Simple Web Browser administration.
- No NT licenses to buy!
- 95/98NT and Unix network compatible
- Now in 1 RU high models (4.5 cm high)
- Disk Spanning, JBOD or Raid level 1 built-in
- Free Reflect-It software to automatically backup you laptops or PCs.

SPECIAL OFFER

Buy any MaxAttach C Series System and receive a Maxtor 40 Gb Firewire Disk Drive FREE!!!*

*Limited Stock

Maxtor Firewire Disk Drive Model 1394

Max1394-40Gb External Disk Drive
- 40 Gb Raw Ultra ATA Disk
- Firewire ready, or use PCI Card
- (B6511) GST INC **$665**

Max1394-80Gb External Disk Drive
- 80 Gb Raw Ultra ATA Disk
- Firewire ready, or use PCI Card
- (B6512) GST INC **$945**

Max1394PCI Adapter Card for Windows 98/2000
- Dual 400 Mb/sec Firewire Interface
- Mac and PC Compatible
- Plug and Play
- (B4383) GST INC **$120**



More from Digital Tape Solutions



Quantum DLT4000/ST
(70917) GST INC **$2,832**

Quantum DLT8000/ST
(82501) GST INC **$7,158**

DLT Tape media IIIXT 15/30GB Tape
(68362) GST INC **$80**

***IV DLT* Tape media 20/80GB**
(71231) GST INC **$155**

DLT Cleaning Tapes
(97851) GST INC **$93**

Fly Buys.

Collect **Fly Buys** points on your computer hardware & software when you purchase from HARRIS TECHNOLOGY.

ECRIX VXA-1 Tape Drive

INTERNAL (91106) GST INC **$1,759**

EXTERNAL (91110) GST INC **$1,995**

EXTERNAL BUNDLE PACK
Firewire interface and Retrospect software
(B1856) GST INC **$2,459**



- 33 GB Native, 66GB compressed
- 3-6MB sec sustained, that's 21.6GB/Hr
- SCSI-2 and LVD models available.
- Variable speed operation matches data throughput to your computer
- Packet based technology guarantees reliable restores
- LINUX and Apple Mac approved.
- Variety of case colours (*White, black, red, translucent)
- Compatible with most backup software

Benchmark DLT1 Tape Drive





INTERNAL
(88037) GST INC **$3,199**

EXTERNAL
(88038) GST INC **$3,730**

- 40GB native, 80GB compressed
- 3-6MB sec sustained, that's 21.6GB/Hour
- Ultra Wide SCSI LVD interface
- Reads DLT4000 tapes (20/40Gb Only)
- Internal or External models
- LINUX Approved
- 7 tape autoloader available
- Compatible with most common backup software
- Standard DLT form factor

Overland DLT1 Based Autoloader

NEW!



"Lowest Cost DLT compatible Autoloader on the market"

- 400 Gb native, 800 Gb compressed capacity
- DLT1 Single Tape Drive included
- 10 tape capacity
- Overland DLT reliability
- LVD 68 pin SCSI Interface
- Includes 1 data tape and cable
- 20 Gb/Hr throughput.
- Optional On-site warranty.

(A0476) GST INC **$9,140**

APR 18

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval.

Quantum

Check for latest prices & products!

Web Direct www.ht.com.au/cat/quantum

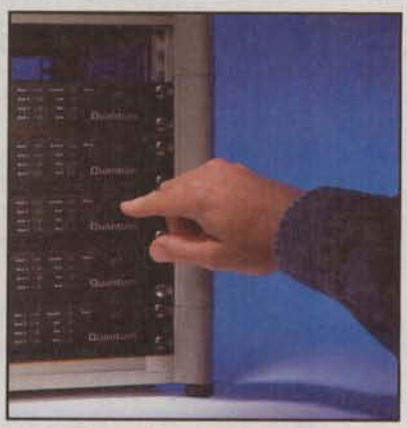
If it's important to you, save it with us



1. Plug into AC power



2. Connect to Ethernet hub



3. Turn Snap Server on



HARRIS TECHNOLOGY WOULD LIKE TO WISH YOU A HAPPY EASTER

INSTALL UP TO 240GB ON YOUR NETWORK IN MINUTES!!!

New Version v3.0
Delivering Even Greater Control, Security and Functionality

Ease of Use
- Auto-sensing 10Base-T/100Base-TX
- Automatic recognition of network types/clients
- Supports DHCP, BOOTP and RARP
- Configuration via Web browser

Features
- Embedded OS (unlimited user license)
- Pentium-class processor
- Ultra ATA hard drives
- RAID 5, 1 or 0
- Easily supports 100 or more clients
- v3.0 Disk space quota set by administrator
- v3.0 Full functioning FTP server
- v3.0 SNMP support

Compatibility
- Simultaneous support for Windows 2000, NT, Netware, UNIX, Linux and Macintosh networks, and clients across TCP/IP, IPX, NetBEUI and AppleTalk networks
- v3.0 Complete NFS 3.0 protocol support, symbolic linking of files and directories, Network Lock manager and rpcinfo command support.

Network Backup
- v3.0 Compatible with Windows and Netware backup software, including Veritas Backup Exec, Computer Associates ARCserveIT and Microsoft backup software for Windows 95/98/NT/2000
- v3.0 SMART predictive disk failure analysis

Network Security
- v3.0 Set access permissions at file and directory level
- Integrates with Microsoft Domain Controllers or local user list

Guarantee
- 3-year parts and labour

Price
- 15GB (A3489) GST Inc. **$1,260**
- 30GB (A3528) GST Inc. **$1,900**
- 60GB (A8926) GST Inc. **$4,050**
- 120GB (A8118) GST Inc. **$7,150**
- 240GB (A8119) GST Inc. **$10,700**

Snap! server™
The Industry Standard

Snap Servers are engineered for one purpose: file sharing. That's why they can be up and running on a LAN in just minutes! Snap Servers offer you the perfect combination of quick and easy installation when compared to an NT server. Snap Servers are pre-configured to work in all major network environments, which means you just plug it in and turn it on, with no network downtime.



Web Direct

See Web Direct Link (at top of page) for more products and latest info!

© Quantum Corporation, All rights reserved. Quantum and the Quantum logo are trademarks of Quantum Corporation, registered in the U.S.A. and other countries.
Snap Server is a trademark of Quantum Corporation. All other product names are trademarks of their respective companies.

APR 19

Sales:	**1300 13 9999**	**Website:**	**www.ht.com.au**
Fax:	**1300 13 6666**	**E-mail:**	**sales@ht.com.au**

Delivery Australia-Wide

OPTISTOR®

Web Direct www.ht.com.au/cat/scsi

Printer, Camera's & CD-R/W

Network Cameras AXIS 2120

AXIS COMMUNICATIONS

If a picture says a thousand words then an Axis network camera can speak volumes.

Fly Buys. Shop at HARRIS TECHNOLOGY™ and collect Fly Buys Points!



Catch it, Web it, Watch it... Built-in Web server and motion detection. The perfect tool for any web attraction application! No PC required for transmitting your images over the WAN/LAN or the Internet - you're just a network plug away from live remote monitoring from any convenient desktop.

- Plug-and-Watch – over any TCP/IP network
- Built in Web Server
- Built in motion detection
- Plugs into hub or modem
- Video stream – 25/30 images/second
- DC iris support– for outdoor light conditions



(A3916) GST INC **$2,750**



Fast Delivery Australia Wide

Desktop CD Duplicator DESKTOP DTP

Meet your New Office Partner



The Desktop Publishers integrate software, production robotics and ink jet printing for quick, easy production of one-of-a-kind CDs or duplicate CDs

Connects to your computer. Ready to go. Easy to do!

For the ultimate in compact design, offers convenience and professional CD-R quality, choose the Desktop from Rimage.



Desktop DTP 800- 1 drive

(B4413) GST INC **$8,950**

Desktop DTP1000- 1 *drive*

(B2968) GST INC **$13,730**

* Illustration shows 2 drives

Web Direct

See Web Direct Link (at top of page) for more products and latest info!

OPTISTOR® CD/DVD Server CACHING TOWER



The new Optistor CD/DVD Caching tower is yet another addition to the Optistor NAS (Network Attached Solutions) range. Featuring:

- The Axis CDE100 CD-ROM Server,
- Hard disk caching support for up to 255 CD's or 95 DVDs.
- Great news for organisations that require fast access to information stored on CDs and DVDs!
- Includes DVD Rom drive to load CD and DVD data

Towers start from 25 CD or 4 DVD Capacity through to 255 CD's or 95 DVD's.

(B6595) GST INC

FROM $3,675

APR 20

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval.

SERVERLINK INFINITY

Web Direct www.ht.com.au/cat/comsol

Intelligent KVM Switches

Control multiple PCs or network servers with a single monitor, keyboard & mouse



3 YEAR WARRANTY

ServerLink Infinity Range

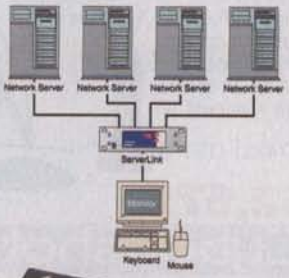
What is a ServerLink KVM Switch?

The ServerLink range of Auto KVM switches allow you to take full control of multiple PCs or network servers with just one monitor, keyboard and mouse. There is no software to load – just plug in your computers, plug in your monitor, keyboard & mouse and you are ready to go. All ServerLink KVM switches are hardware only solutions, totally independent of software and network operating systems. This ensures hassle free installation and error free switching & booting.



On Screen Display

- Select computers via On-Screen-Display or front panel
- Name computers for simple selection
- Mouse & keyboard emulation for flawless booting
- Scan Mode for periodic computer monitoring
- Standard cables used throughout
- Cascadable to control up to 256 computers
- 8 & 16 port models 19 inch rack mounted design
- Australian designed and manufactured



SERVERLINK INFINITY

PS/2 Computers Only

2 Port Model Now Available

FROM **$270**


SL-221

SL-221	2 Port ServerLink Infinity KVM Switch for PS/2 only	(B3047) GST INC **$270**
SL-221-P	2 Port ServerLink Infinity KVM inc. 2 x 2m PS/2 cables	(B3048) GST INC **$310**
SL-421	4 Port ServerLink Infinity KVM Switch for PS/2 only	(A9890) GST INC **$330**
SL-421-P	4 Port ServerLink Infinity KVM inc. 4 x 2m PS/2 cables	(B2759) GST INC **$412**
SL-821	8 Port ServerLink Infinity KVM Switch for PS/2 only	(97888) GST INC **$1,069**
SL-821-P	8 Port ServerLink Infinity KVM inc. 8 x 2m PS/2 cables	(97889) GST INC **$1,239**
SL-1621	16 Port ServerLink Infinity KVM Switch for PS/2 only	(97890) GST INC **$1,796**
SL-1621-P	16 Port ServerLink Infinity KVM inc. 16 x 2m PS/2 cables	(97891) GST INC **$2,127**

PS/2 & AT/Serial Computers

SL-401	4 Port ServerLink KVM Switch for PS/2 & AT/Serial	(63724) GST INC **$737**
SL-801	8 Port ServerLink KVM Switch for PS/2 & AT/Serial	(63777) GST INC **$1,230**
SL-1601	16 Port ServerLink KVM Switch for PS/2 & AT/Serial	(63778) GST INC **$2,069**

ServerLink to computer cable

Each end of the cable fans out into three connectors.

2m cable for **PS/2** mouse, keyboard and monitor (63972) GST INC **$27**

5m cable (63976) GST INC **$60**

2m cable for **AT/Serial** mouse, keyboard and monitor (63974) GST INC **$26**

5m cable (63977) GST INC **$60**



Sales: 1300 13 9999 **Website:** www.ht.com.au
Fax: 1300 13 6666 **E-mail:** sales@ht.com.au

Visit our HT@Kmart Kiosks! See Page 2

SONY

Check for latest prices & products!
Web Direct www.ht.com.au/cat/sony

FD Trinitron- Still the Best Quality

CPDE220 (17")

NEW!

16" viewable image, 1280 x 1024 @ 75 Hz, Max Refresh Rate: 85Hz @ 1024 x 768 8, Complete On-screen Menus, Anti Reflective Screen Coating, Windows® 95/98, Windows® NT.

(B1831) GST INC
$709

CPDG400 (19")

18" viewable image, 1880 x 1440 @ 70 Hz Max Refresh Rate: 85Hz @ 1600 x 1200, Complete On-screen Menus, Anti Reflective Screen Coating, Windows® 95/98, Windows® NT.

(84023) GST INC
$1,120

CPDG500 (21")

19.8" viewable image, 2048 x 1536 @ 75 Hz Max Refresh Rate: 85Hz @ 1800 x 1350, Complete On-screen Menus, Anti Reflective Screen Coating, Windows® 95/98 and Windows® NT.

(84024) GST INC
$1,872

Collect 1000 Bonus Fly Buys points when you purchase B1831, 84023, 84024, 99849, B1237, A7100, B8349 or A7097 between 20/02/01-31/03/01

Flat Display LCD

SDMN50 (15")

15" XGA TFT Active Matrix LCD Panel, Black Matte Finish, Bright Picture, Sharp Images - 300:1 Contrast Ratio 200 cd/m2 Luminance / 0.297mm Dot Pitch, 1024 x 768 @ 75Hz, Wide Viewing Angle 140°, Stereo Speakers in Base, On-screen Digital Controls, Windows® 95/98 and Windows® NT.

(97422) GST INC
$2,679

SDMM51 (15.1")

15.1" XGA TFT Active Matrix LCD Panel • Digital Multiscan® supports up to 1024 x 768 @ 75 Hz, Max resolution 1024 x 768 @ 75Hz, Wide viewing angle - 140°, Built-in Stereo Speakers and Headphone Jack, Windows® 95/98 and Windows® NT.

(B0916) GST INC
$2,120

CPDL181 (18.1")

18.1" SXGA TFT Active Matrix LCD Panel, Lightweight at 9 kg, 208mm deep, 300:1 contrast ratio, 200cd/m2 luminance, 0.2805mm dot pitch, Res 640 x 480 up to 1280 x 1024 @ 85Hz, Wide Viewing Angle - 140° horiz & 110° vert, Low Power Consumption, Windows NT And Windows 98.

(84011) GST INC **$5,495**

MONITORS

Assorted Memory Sticks

8MB Memory Stick (88647) GST INC **$70**

16MB Memory Stick (86779) GST INC **$100**

32MB Memory Stick (88654) GST INC **$162**

64MB Memory Stick (88648) GST INC **$278**

Cyber-shot DSC-S30

Memory Stick Digital Camera 1.3 Megapixel

InfoLithium M (NPFM50), 3x Zoom (6x Precision Digital), 2.5" Free-Angle LCD, Email, Video out, USB, External flash socket, 1280x960 (1.3 Megapixel) Resolution, MGI PhotoSuite (Windows/Mac), MGI VideoWave (Windows), 1yr warranty

(99849) GST INC **$1,124**

Cyber-shot DSC-F505V

Memory Stick Digital Camera 3.3 Megapixel

InfoLithium S (NPFS11), 5x Zoom (10x Precision Digital), 2" LCD, MPEG Movie HQ, Voice Memo, Email, Audio/Video out, USB, External flash socket, 2240x1680 (3.3 Megapixel) Resolution, MGI PhotoSuite (Windows/Mac), MGI VideoWave (Windows), 1yr warranty

(A7100) GST INC **$1,840**

Cyber-shot DCSP1

NEW Memory Stick Digital Camera 3.3 Megapixel

3.3 Megapixel resolution
3x Optical zoom (6x Precision Digital zoom)
Memory Stick Digital Still Camera
MPEG Movie function

(B1237) GST INC **$1,757**

Mavica FD75

Floppy Disk Digital Still Camera .35 Megapixel

3.5" 2HD Floppy, InfoLithium L (NPF330/NPF550), zoom, 2.5" LCD, 640 x 480 (0.35 Magapixel) Silver in colour.

(B8349) GST INC **$875**

Mavica CD1000

Mini CD-R Digital Still Camera 2.1 Megapixel

8cm 156MB CD-R, InfoLithium L (NPF330/NPF550), 10x zoom (20x Precision Digital), Electronic Viewfinder, 2.5" LCD, MPEG Movie HP, Voice Memo, Email, Audio/Video Out, USB, External Flash Socket, 1600x1200 (2.1 Megapixel) Resolution, Picture Gear 4.1 Lite, MGI PhotoSuite, MGI VideoWave, Adaptec DirectCD.

(A7097) GST INC **$2,635**

CAMERAS

APR 22

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.
bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International
Finance methods are subject to approval.

SONY

Check for latest prices & products!

Web Direct www.ht.com.au/cat/sony

The power comes from within



Sony VAIO XE17

- Intel Pentium III, 800MHz
- 128MB SDRAM (Max 256MB)
- 20GB HDD
- 14.1" colour TFT display
- Jog-Dial, USB & i-link™
- Docking Station
- Windows 2000

(B2173) GST INC

$6,199

Sony VAIO C1VM



- Crusoe(tm) Processor
- TM 5600 600MHz
- 128MB SDRAM (Max 192MB)
- 12GB HDD
- 8.9" colour TFT display
- USB & i-link™, Memory Stick slot
- Camera 1/6", 350,000 pixel progressive scan CCD.

(B2176) GST INC

$3,799

Sony VAIO F770K

- Intel Pentium III, 650 MHz
- 64 Mb RAM
- 20 Gb HDD
- 14.1 TFT display
- USB and i-link™
- DVD & software player
- Network 10/100 contector
- Windows® 2000 Professional

(B6805) GST INC

$3,999

Sony CRX160SBK

12x Records & 8x Rewrites, High speed 32x playback. Support formats: CD-ROM, CD-Audio & Video CD, SCSI-II interface. Buffer memory 4Mb. Supports CD writing and ReWriting on both 74min/650MB disks and new 80min/700MB disks. Writing method: Disc, Session, Track, variable or Fixed Packet, Multi Session, Track Reservation. Software bundled: Adaptec's Easy-CD Creator version 4.02 and Direct-CD. Bundled 1 blank CD-RW & 1 CD-R.



(A7056) GST INC **$587**

Sony CRX140EBK

IDE: 8x write, 4x rewrite & 32x read; Suites 5.25" 1/2 Height slot. Supplied with additional interface cable, audio cable, software (Adaptec Easy CD Creator & Direct CD for Win 95, 98, NT & 2000 Pro), media (one CD-R & one CD-RW disk), mounting screws & easy-to-follow installation manual.



IDE: (88568) GST INC **$325**

Sony Memory Sticks

Compatible with these products available from Sony call us for more details.



Projector



Photo Printer



Sony Digital Handheld Cameras

APR 23

Sales: 1300 13 9999
Fax: 1300 13 6666

Website: www.ht.com.au
E-mail: sales@ht.com.au

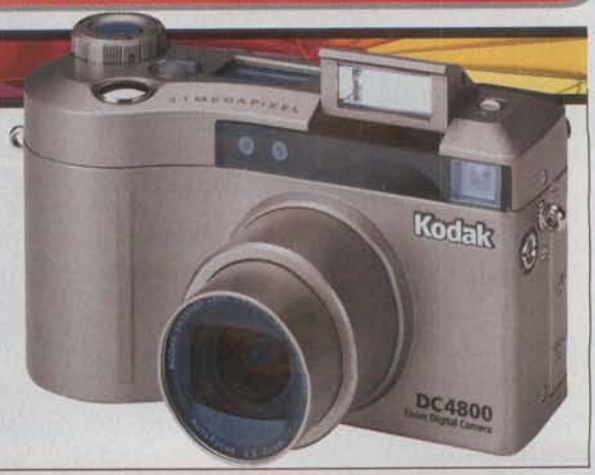
Visit our HT@Target Kiosks! See Page 2

Kodak

Web Direct www.ht.com.au/cat/kodak

Taking Pictures Further

Kodak DC4800



For passionate digital photographers or those needing the highest possible quality or the widest creative control. Compact size. 3.3 megapixels - super crisp resolution allowing prints up to 11"x17". Six image qualities, from e-mail to uncompressed Tif. Loaded with features. Variable ISO settings (100, 200, 400). Wide angle 3x optical zoom plus 2x digital zoom. Lithium Ion rechageable battery (rechargeable in camera). Manual & auto settings. Variable colour balance. TTLAF. Special effects. Lens threaded for additional external lenses. Burst capture mode."

(A3295) GST Inc: **$1,190**

Fly Buys.

Collect **Fly Buys** points on your computer hardware & software when you purchase from HARRIS TECHNOLOGY.

PM200 Printer

NEW!



The most distinctive feature on the Personal Picture Maker 200 is its 1.8-inch, full-colour, LCD preview screen just like those on digital cameras. You don't even need to be connected to a PC, you just insert a memory card from a digital camera (the PPM200 accepts both Smart Media and Compact Flash formats) to print. The preview screen allows you to scroll through all the images on the card, select those to print, choose the number of copies, and in what size and layout. Compatible with Microsoft Windows 98 and Millennium Edition, it connects easily via a USB port.

(B3084) GST Inc: **$535**

Kodak

NEW!



The KODAK DC3800 Digital Camera is the sleek, high-performance, easy-to-use digital camera. Its small size makes it pocket-perfect. The 2.1MP resolution delivers detailed, vibrant pictures on screen and paper. And the 2X digital zoom lets you focus on what's important. The USB COMPACTFLASH Card Reader makes it easy to upload your pictures and its point-and-shoot design makes it user-friendly.

(B1252) GST Inc: **$699**

Kodak DC3400



• Two-megapixel resolution means exceptional detail and brilliance – up to 8" x 10" prints. • Its 2X optical zoom delivers crisper close-ups, and its 3X digital zoom lets you get even closer. • User-friendly controls make the DC3400 quick to learn & easy to use. • Zoom Digital Camera, ensuring high quality & no-nonsense performance. • Get connected quickly & easily with its USB and serial cables - it's easy to download, organize, and e-mail your pictures. • Print your pictures with convenience from your own printer.

(A5579) GST Inc: **$799**

Kodak DC5000



Rugged, durable, and easy-to-use, the KODAK DC5000 will help you get the job done. The DC5000's weatherproof body will hold up under the toughest circumstances. Two-megapixel resolution provides you with excellent picture quality even on 8" x 10" prints. The 2X optical (30 – 60 mm) and 3X digital zoom let you choose wide angle or telephoto to take pictures in a variety of open spaces. All in all, a practical, intuitive package that is as easy to use as a point & shoot, but tough on the job

(A3540) GST Inc: **$999**

Kodak EZ200



Low cost digital point-and-shoot camera that's also a PC/web camera. Compact & light. VGA camera - ideal for easily emailing pictures. Capture short video clips and share via video email. Portable like a traditional camera, but included software also allows camera to be tethered to PC for live video calls. Burst mode for action shots. USB interface. 4Mb internal memory. With removable/ adjustable base to allow full tilting & swivelling.

(A7287) GST Inc: **$185**

Kodak DC3200



Capture fun and spontaneity with the DC3200. One megapixel resolution means eye-catching e-mails and prints up to 5" x 7". Its 2X digital zoom delivers great detail. Two megabyte internal memory and COMPACTFLASH Card capability keeps you shooting longer. And its LCD screen lets you preview your pictures with ease.

NEW!

(B1255) GST Inc: **$425**

Kodak Accessories

32MB Picture Card (62677) GST Inc: **$176**

64MB Picture Card (82249) GST Inc: **$272**

96MB Picture Card (88332) GST Inc: **$426**

Premium Camera Bag (82273) GST Inc: **$62**

80 Minute Ultima (94493) GST Inc: **$2**

Kodak Gold 10 Pack (53993) GST Inc: **$20**

APR 24

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval.

CASIO®

Live Update! Web Direct www.ht.com.au/cat/casio

The unexpected extra

CASIO® KP-C50 NEW



KP-C50 PC TAG WRITER

Print quickly with the touch of a finger during PC operation. Make a quick note of an email address, homepage, URL and more. Output data from schedule software and paste in conveniently in your pocket diary. Enhanced convenience with the mouse pad incorporated into the body.

- Works with PC applications - just select a line on the display for immediate printout
- Supports USB
- Comes with Software & USB Cable. Use same software requirements as KLP1000

(B8404) GST Inc: **$155**

CASIO® KD-C10 NEW

KP-C10 PC TAG WRITER



Easy printing without sacrificing space! The cute and colorful smart printer with USB. Make a quick note of an e-mail address, homepage URL, etc. Output data from schedule software and paste in conveniently in your pocket diary.

Compact, space saving design, Works with PC applications - just select a line on the display for immediate printout, Comes with Software and USB Cable.

(B82405) GST Inc: **$128**

Web Direct

See Web Direct Link (at top of page) for more products and latest info!

CASSIOPEIA EM500

Mobile Multimedia



SPECIFICATIONS:
• Colour Display (TFT 65,536 colour, 240 X 320 LCD Screen) • VR4122 150Mhz CPU Speed • 16MB RAM with MMC Slot – SD compatible • Operating System Windows CE V3.0® • SMS, E-mail & Pocket Internet Explorer • Optional Headphone with Remote Control • Optional WAP browser with IrDA connectivity • Optional soft cable modem. **BUNDLED SOFTWARE:** MP3 and MS Audio Player (MS Standard), MS Word / Excel / Pocket IE, MS Money / MS E-Book Reader, Casio Movie Player / Picture Viewer, Outlook 2000 (Mobile Calendar / Address). **POWER & WEIGHT:** Li-ion Rechargeable battery (approx. 5 hours of operations), Weighs 215grams. **SIZE:** 128 x 81.8 x 19.25 mm. **I/O INTERFACES:** USB (Client) / USB Cable Bundle RS232, Microphone / Speaker / IrDA v1.2, DC jack / Stereo Headphone Jack / Cradle. **PACKAGE CONTENTS** Cassiopeia Unit, Stylus, USB connection cable, Li-ion battery & back-up battery, power adaptor, sync software and instruction manuals. (Specifications & package are subject to change)*

(A3919) GST Inc: **$1,199**

CASSIOPEIA E125



SPECIFICATIONS:
• Colour Display (TFT 65,536 colour LCD Screen) • 150Mhz CPU Speed • 32MB RAM with CF Card Slot • Operating System Windows CE V3.0® • USB interface through docking cradle • Easy set of E-mail through wizard. **BUNDLED SOFTWARE:** MS Word & Excel, Pocket Money, Pocket IE, Multimedia Application (Audio & Video), Bundling Outlook 2000 & IE 5.0 **POWER:** Li-ion Rechargeable battery (approx. 6 hours of operations) **SIZE:** 131.2 x 83.6 x 20 mm. **I/O INTERFACES:** CF Card (Type II), RS232C / Microphone / Speaker / IrDA, DC jack / Stereo Headphone Jack / Cradle. **PACKAGE CONTENTS:** Cassiopeia Unit, Stylus, Cradle with USB connection attached, Li-ion battery & back-up battery, power adaptor, sync software and instruction manuals. (Specifications subject to change)*

(A4107) GST Inc: **$1,375**

Ask about...

EXTENDED WARRANTY

- ☐ Extend to a total of 3 Years Return to Base
- ☐ Extend to a total of 5 Years Return to Base
- ☐ Upgrade Return to Base of Warranty Extension to On-Site

Wine on-line?

VINTAGE CELLARS

vintagecellars.com.au

APR 25

Sales: 1300 13 9999
Fax: 1300 13 6666
Website: www.ht.com.au
E-mail: sales@ht.com.au

See page 2 for locations

Check for latest prices & products!

Web Direct www.ht.com.au/cat/palm

Palm Accessories

Palm™ III/M100 Folding Portable Keyboard

(B4178) GST INC

$231

Also available for the Palm™ V Series

(87210) GST INC

$200



PalmConnect™ USB Kit

(89613) GST INC

$109



Palm™ Mobile Internet Kit

(B3065) GST INC

$50



The Palm™ Mobile Internet Kit is a software solution that allows you to use your Palm handheld in combination with a mobile phone or modem to wirelessly access the Internet.

Palm™ M100 HotSync® Cradle

(A7219) GST INC

$69



Palm™ M100 Face Plate Covers

(A7227) GST INC **$42***



Palm™ M100 Leather Flip Case

(A7224) GST INC

$60*



Palm™ M100 Slim Leather Case

(A7222) GST INC

$60*





Palm™ M100 Stylus 3-Pack

(A7221) GST INC

$14



Palm™ III Series PalmGlove

Black (82231) GST INC

$50

Also available: Purple, olive, blue, teal & yellow.



Palm™ III Series Deluxe Leather Case

(90517) GST INC

$125*



Palm™ IIIc Series Slim Leather Case

(96512) GST INC

$63*



Palm™ III Series HotSync® Cradles

IIIx, IIIxe & IIIe (60673) GST INC **$60**

IIIc (A1211) GST INC **$96**



Palm™ IIIc Auto/Air Recharger Kit

(96517) GST INC

$68*



Palm™ III Series Stylus 3-Pack

(60675) GST INC

$25



Palm™ V HotSync® Cradle

(74669) GST INC

$115



Palm™ V Modem

(74668) GST INC

$340



Palm™ V Slim Leather Case

(90120) GST INC

$55*



Palm™ V Leather Belt Clip Case

(74673) GST INC

$50



Palm™ V Travel Kit

HotSync cradle, plug adapters and AC charger.

(74677) GST INC

$110



Palm™ V Hard Case

(74676) GST INC **$80**



Palm™ V Stylus 3-Pack

(74670) GST INC

$24



* Case only - Palm™ handheld sold separately.

APR 26

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval.

Check for latest prices & products!

Web Direct www.ht.com.au/cat/palm

Handheld Computers

Palm™ m100



Easy to use. Intuitive is the perfect word to describe how easy the Palm™ m100 is to use. You instinctively know how to get it up and running right out of the box. Convenient Notepad - Got a thought? Jot it down directly on the screen in a virtual "sticky note" for quick reminders. The Palm™ m100 features a convenient clock positioned for at-a-glance timekeeping. Change the colour of your handheld with an assortment of snap-on faceplates. Plus, add on any of the thousands of software applications available, from business productivity tools to games. Many are free.

(A4839) GST INC **$325**



HARRIS TECHNOLOGY WOULD LIKE TO WISH YOU A HAPPY EASTER

Palm™ IIIxe



It's the perfect combination of flexibility and power. With 8MB of storage capacity, the Palm™ IIIxe handheld keeps track of thousands of names, addresses, appointments, to-do's and memos with plenty of room to spare for add-on applications. Flash ROM means future upgrades will be a snap. Classic Functions: Date Book, Address Book, To Do List, Memo Pad, Infrared (for beaming). *Extras: Mobile Internet and e-Mail Access*, AvantGo's Web Channel Manager, Link to Microsoft Outlook included. *Addiitional software may be required. ISP account needed.*

(B2406) GST INC **$418**

Palm™ IIIc



The Palm™ IIIc combines functionality and speed with advanced screen technology that renders a vivid, clear colour display. A rechargeable lithium ion battery lasts more than two weeks with normal use, and recharges in your HotSync® cradle in just minutes a day. An optional recharger kit is great when you're away from your PC. Stores approximately: 10,000 addresses, 5 years of appointments, 3,000 to-do items, 3,000 memos, 400 e-mail messages and lots of third-party applications.

(95059) GST INC **$645**

Fly Buys. Collect Fly Buys points on your computer hardware & software when you purchase from HARRIS TECHNOLOGY.

Palm™ Vx



If you're looking for the sleekest device on the market, look no further than the Palm™ Vx handheld computer. Weighing in at just 114 grams., it has the same anodised aluminum exterior and LCD screen as the Palm™ V handheld computer. Yet it has four times the memory of its predecessor, giving you more speed and more storage. Stores approximately: 10,000 addresses, 5 years of appointments, 3,000 to-do items, 3,000 memos, 400 e-mails and lots of third-party applications.

(B1545) GST INC **$Call 1300 13 9999**

$Web www.ht.com.au/cat/palm

We aim to have the best price on Palm™ handhelds

APR 27

Sales: 1300 13 9999 **Fax:** 1300 13 6666 | **Website:** www.ht.com.au **E-mail:** sales@ht.com.au | Order on-line www.ht.com.au

Jackson

Web Direct www.ht.com.au/cat/jackson

your com.muniation.link

HARRIS TECHNOLOGY @ Kmart

Broadway (Sydney)
Burwood (Melbourne)

Kmart Shoppers!

Not all products are in-store, but consulting & advice available on all items

IEC Style Inline Surge Protector

Fits standard IEC 320 C13 to C14 kettle style connectors. Fitted with both a power on indication light and an audible alarm (70dB @ 8cm). Protects your equipment and maintains the power supply. Fits PC's, monitors, scanners and many other machines.



ISP3 (B8348) GST Inc: **$42**

Figure 8 Style Inline Surge Protector

Designed to fit the standard IEC 320 C7 to C8 Figure 8 connector. Fits most laptops, hi-fi equipment and video recorders. The unit incorporates a red neon to easily monitor the continuing protection of your equipment.



ISP4 (B8350) GST Inc: **$34**

Cloverleaf Style Inline Surge Protector

The ISP6 is designed to fit into the standard IEC 320 C5 to C6 "cloverleaf" style connector. This unit has been introduced to compliment the expanding range of laptop computers that use the "cloverleaf" connector.



ISP6 (B8351) GST Inc: **$42**

Single Power & Telecom's Protector

2x RJ45 / RJ12 Surge Protector for single power use. • Ideal for laptops and road warriors protects your computer / modem from surges through both power and telephone line. • Smart design and passes the latest approval tests, to the 1999 specifications. • Slimline case allows use in power boards. • Use RJ45 or RJ12 connectors. SUITABLE FOR: Internet, Modem, Computers, Laptops, Answering Machines, Caller ID, Cordless Telephones, Fax Machines etc.



PTO666 (B8368) GST Inc: **$32**

Six Way Power & Telecom's Protector - Internet

Smart design & passes the latest approval tests. • Slimline case for use in tight areas • 6 x 240VAC surge protected power outlets • Use RJ45 or RJ12 connectors - supplied complete with adaptors • Extra long power cord • Light indicator showing power available • Circuit breaker with protected reset function SUITABLE FOR: Internet, Modem, Computers Laptops, Answering Machines, Caller ID Cordless Telephones & Fax Machines



PTO888 (80813) GST Inc: **$41**

Eiger AUSTRALIA

Web Direct www.ht.com.au/cat/eiger

BUSlink Hard Drive. Technology the easy way.





Stand the drives upwards to save desk space, and for extra hard dsic storage, simply stack up more BUSlink FireWire Hard Drives.



BUSlink FireWire Hard drive is a fast, easy way to add additional storage to your computers. You simply plug the FireWire card supplied into any PCI slot and you're set to go. Of course, it is Hot Swap capable! BUSlink FireWire has a transfer rate of 400MB/sec or 30 times faster than those USB hard drives. Making BUSlink FireWire Hard Drive ideal for digital video editing and any high speed, high capacity hungry tasks.

12 Month Warranty, No drivers necessary, package includes FireWire card suitable for a PCI slot and 2m FireWire cable.

20Gb Package

(B4518) GST Inc:

$649

- AVI, movie storage
- back up
- file storage
- games storage
- portability
- MP3 file storage
- photo storage



HARRIS TECHNOLOGY™ for all your *computer* needs!

APR 28

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval.

D-Link®

Web Direct www.ht.com.au/cat/dlink

Small-Medium Business Networks

DWL-1000AP

D-Link Air Access Point

Fast 11 meg Performance. Build The Size of Your Wireless Network, or Extend Your Existing Wired Network.



NEW Wireless TECHNOLOGY

(A9251) GST Inc: **$995**

DI-701

Cable ADSL Gateway

The D-Link DI-701 Residential Gateway protects your computers from hackers or unwanted users. It is the easiest and safest way to share your high-speed Internet connection with a DSL Modem or Cable Modem.



(98249) GST Inc: **$379**

For all your small to medium business and home network needs please call for more information and pricing. We have an extensive range of fantastic D-Link products on our database.

DKVM-8

8 Port Keyboard, Video and Mouse Switch

"Easy to use, powerful, and scaleable KVM solution" • Controls 8 different server PC's w/keyboard • Utilizes advanced microprocessor emulation, 2 sets of cables, user friendly interface.



NEW PRODUCT

(B2656) GST Inc: **$859**

DWL-120

D-Link Air 11Mbps Wireless LAN USB Appapter

Wireless USB Adapter. Upto 11Mbps data rate. Auto sensing and adjusting speed to conditions for maximum performance CSMA/CA with ACK.



NEW Wireless TECHNOLOGY

(A8487) GST Inc: **$350**

DES-1008D

8 Port Fast Ethernet Switch

The D-Link DES-1008D is a powerful desktop Dual Speed 8-port 10/100Mb Ethernet/ Fast Ethernet NWay auto negotiating Switch.



(98254) GST Inc: **$285**

DES-1016R

16 Port Switch for Workgroups

Built with advanced functions, these switches are designed for workgroups with advanced requirements. Powerful yet easy to use, they allow users to simply plug any port to either a 10Mbps or 100Mbps node to multiply bandwidth, boost response time and satisfy heavy load demand. Rack mountable.



(98255) GST Inc: **$785**

Web Direct

See Web Direct Link (at top of page) for more products and latest info!

Description	Part #	GST Inc
D-Link DP-303 10/100 Print Server (3xParallel Port)	(A8876)	$310
D-Link DU-560M External V.90 56K Voice/Fax/Data Modem (USB)	(98261)	$105
D-Link DFM-560I Internal PCI V.90 56K Voice/Fax/Data Modem	(74361)	$65
D-Link DES-3225G 22+2 port 10/100Mbs Mang Switch W/ V-Lan	(90755)	$1,974
D-Link DFE908DX 8 Port 10/100Mbs Dual Speed Hub	(B7830)	$270
D-Link DFE-916DX 16 Port 10/100Mbs Dual speed hub	(87207)	$525
D-Link DFE2624x24-port 10/100Mbps Stackable Dual Speed Hub	(98307)	$1,144
D-Link DP-602 2 Port Internet Network Server	(81535)	$379
D-Link DFE-530TX PCI-Bus 10/100Base TX Fast Ethernet Adapter	(62956)	$42

APR 29

Sales: 1300 13 9999 **Fax:** 1300 13 6666 **Website:** www.ht.com.au **E-mail:** sales@ht.com.au

Do you want FlyBuys with that?

NETGEAR™

Web Direct www.ht.com.au/cat/netgear

take the work out of networking - plug into

Collect 500 Bonus Fly Buys points when you purchase B6554, 97718, A8862, 68900, 97719 or 70197 between 20/03/01 - 30/04/01

shared internet access

The NETGEAR routers offer the ability to connect to the internet easily using ISDN, analogue or Cable/DSL. All products support IP routing and offer NAT and DHCP for security and ease of set-up.

FR314 4 Port 10/100 mbps cable/dsl firewall router — NEW
(B6554) GST INC **$698**

RT 338 1 Port 10/100 mbps ISDN router
(97718) GST INC **$610**

RT 314 4 Port 10/100 mbps switch with cable/DSL interface
(A8862) GST INC **$349**

RT 328 1 Port 10baseT ISDN router
(68900) GST INC **$610**

RT 311 1 Port 10/100 mbps switch with cable/DSL interface
(97719) GST INC **$275**

RM356 1 Port 10baseT hub with intergrated 56k modem
(70197) GST INC **$565**

network starter kits

SB 105
5 Port 10Mbps hub, 2x10/100PCIcards, cables, modem sharing software and guide
(A3293) GST INC
$125

FB 105
5 Port 10/100 switch, 2x10/100 PCI Cards, cables, modem sharing software and guide
(A3935) GST INC
$215



10/100 fast ethernet switches



FS 105 5 port 10/100 autosensing
(84722) GST INC **$150**

FS 108 8 port 10/100 autosensing
(70905) GST INC **$250**

FS 116 16 port 10/100 autosensing
(A5347) GST INC **$485**

FS 516 16 port 10/100 auto-sensing and internal PSU/Vista
(60522) GST INC **$830**

FS 524 24 port 10/100 switch - stackable
(77549) GST INC **$940**

FS 524S 24 port 10/100 switch - stackable — NEW
(B6540) GST INC **$1,630**

10/100 dual speed hubs



DS 104 4 port 10/100 Mbps
(70795) GST INC **$130**

DS106 6 Port 10/100 Mbps
(84721) GST INC **$149**

DS108 8 port 10/100Mbps
(18755) GST INC **$199**

DS116 16 Port 10/100 Mbps
(81519) GST INC **$375**

DS516 16 Port 10/100 Mbps with internal PSU and vista
(18747) GST INC **$595**

DS524 24 Port 10/100 Mbps with internal PSU and vista
(69474) GST INC **$780**



enquire for pricing on **NETGEAR** 10mbps **ethernet** hubs

APR 30

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.
bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International
Finance methods are subject to approval.

NETGEAR™

Web Direct www.ht.com.au/cat/netgear

the power of networking with NETGEAR

new product FR314

FR314 Cable/DSL Firewall Router with 4-Port 10/100 Mbps Switch



- Denial of Service attack protection
- On-board URL content filtering
- Enables high-speed Internet sharing
- Easy, web-based setup
- Auditing of browsing activities

NETGEAR's FR314 Cable/DSL Firewall Router provides a higher level of security for small offices and home offices and affords worry-free network administration with true, hardware-based firewall protection. Cable or DSL service can be safely shared among all networked computers because the FR314 is designed with Stateful Packet Inspection technology to prevent DoS attacks and malicious packets. It also provides Internet access filtering capability (based on time of day, URL, or URL keywords), VPN pass-through, logging and reporting capabilities, and easy, Web-based setup. Shared broadband Internet access, an included 10-ft. Ethernet cable, and an integrated 4-port switch reduce your total network costs.

(B6554) GST INC **$698**



HARRIS TECHNOLOGY™ for all your computer needs!

gigabit fibre + copper



These high performance Gigabit switches provides either fibre or copper backbone connectivity for power workgroups, data centres and server farms. No additional modules are required - each product ready to install straight from box.

GA 620T 32/64 bit PCI gigabit network card (B3570) GST INC **$699**	**FS 510T** 2 port 100/1000 with 8 10/100 ports (copper) (A1209) GST INC **$1,780**
GS 504T 4 port 100/1000 (Copper) (A1375) GST INC **$2,990**	**FS 518T** 2 port 100/1000 with 16 ports 10/100 (A1374) GST INC **$2,565**

printer servers

The Netgear print servers enables you to connect your printer to a network for sharing amongst multiple PC's



PS 105 (67225) GST INC	10 Mbps Print Server	**$230**
PS 110 (67226) GST INC	10/100 Mbps Print Server	**$250**
PS 113 (A3287) GST INC	10/100 Mbps Print Server 3 Port	**$375**

network cards

FA 311 Ethernet adapter 10/100 PCI
(A1372) GST INC **$49**



FA 312 Ethernet Adapter
(A1373) GST INC **$53**

FA 410 PCMCIA 10/100 Mbps Network Card



(60071) GST INC **$135**

FA 510 Network Card for Notebook PC
(81319) GST INC **$145**

call **1800 787 638**

for 24hr 7 days a week **support**

APR 31

Sales: 1300 13 9999
Fax: 1300 13 6666
Website: www.ht.com.au
E-mail: sales@ht.com.au
Delivery Australia-Wide

3com

Check for latest prices & products!

Web Direct www.ht.com.au/cat/3com

Connectivity where & when you need it

3Com® Home Wireless Gateway

Wireless Access

Share high-speed Internet access, personal files, printers and other devices wirelessly and over Ethernet wires, without a hub. Go online without being tied to a desk, Ethernet port or phone jack, up to 300 (91m) feet from the gateway. As fast as many office networks — 11 Mbps wireless throughput, 3 wired 10/100 Mbps Fast Ethernet ports. Built-in firewall and encryption protect your information from hackers.Web-based installation.Wi-Fi™ certified for compatibility with other wireless home and office networking products, protecting your investment.



(B7460) GST Inc **$750**



HARRIS TECHNOLOGY™ for all your computer needs!

3Com® Wireless LAN

PC Card

The 3Com® AirConnect® 11 Mbps Wireless LAN PC Card, a 16-bit, 5-volt, Type II PC Card for notebooks, opens a new era of mobility for your enterprise network. Working with the 3Com AirConnect 11 Mbps Wireless LAN Access Point (or any 802.11b standards-based access point), the AirConnect PC Card gives your workforce seamless connectivity to the network throughout the entire campus.



PCI card is also available!

(A1868) GST Inc **$395**

HARRIS TECHNOLOGY™ @ Target.

Ballarat (VIC), Camberwell (VIC) & Epping (VIC)

Target Shoppers! Not all products are in-store, but consulting & advice available on all items

3Com® OfficeConnect™

Dual 56K Lan Modem

OfficeConnect Dual 56K LAN Modem brings low-cost, high-speed Internet and Ethernet connectivity to your Small Office/Home Office computers in just minutes! This product is designed for non-technical users that need radical simplicity, high speed Internet access as well as local file and print sharing capability.



(A3358) GST Inc **$795**

APR 32

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval.

iomega

HARRIS TECHNOLOGY @ Kmart

Broadway (Sydney) and Burwood (Melbourne)

Web Direct www.ht.com.au/cat/iomega

Smart Storage Solutions

Predator NEW

Iomega Predator CD-RW drive



Introducing "Predator" - the new, radically designed, compact-sized, top-loading Iomega external CD-RW Drive. Predator is simple to set up using the USB interface, and includes loads of new award winning software, including MusicMatch and Iomega Quik Sync 2, and more.

Predator™ USB Iomega CD-RW External (B4416) GST Inc: **$545**

Iomega CD-RW™ USB External 4x4x6 (92623) GST Inc: **$480**

Zip NEW

Host-powered Zip 250MB USB



The Zip® 250 USB drive is now available with a USB cable that provides both data and power, so you don't need any external power source. Powered by a USB cable, its easy to connect (just plug it in) and easy to launch (no rebooting). The Zip 250 USB host-powered drive also comes with the new U-shaped Zip® 250MB disk, and includes a trendy drive pouch.

(B6404) GST Inc: **$365**

Iomega CD-RW



Iomega ZipCD Internal drive is the ideal way to store, share and archive information in a common 650MB format. Compatible with Windows 2000. Also ships with Adaptec Easy CD Creator v4.02c and *Direct CD 3.01*.

8x4x32 (97712) GST Inc: **$295**

12x10x32 (B0882) GST Inc: **$490**

HipZip



Announcing Iomega's new HipZip™ Digital Audio Player. With its sleek design, this palm-sized player lets you download your favourite MP3 & Windows Media format tunes from the internet, & play them anywhere. The HipZip™ also acts as a PocketZip storage device: download & transport music, spreadsheets, images, etc, up to 40MB per disk.

(B1436) GST Inc: **$539**

QuikSync2



Back up your files *without any hassle*. Every time you save a file to your hard drive or to a network drive, Quik Sync 2 software automatically makes a copy of that file on an Iomega disk. All you have to do is select folders for the software to monitor. Quik Sync 2 is compatible with Zip, Jaz, PocketZip and Iomega CD-RW drives.

(B4408) GST Inc: **$40**

PocketZip

PC Card Drive



Removable solution for notebook users. Store, protect and share important information on a 40MB PocketZip (1 disk included).

USB docking station (A2306) GST Inc: **$85**

Drive PC card & disk (78902) GST Inc: **$190** (75985) GST Inc: **$175**

You have the chance to win instantly with Zip media. Until April 31, all Zip media 2 pack and 10 pack discs give you the chance to win on the web. You can win an Iomega **HipZip**, Digital Audio player, or a **Predator** CD-RW drive instantly. Every entry goes into the draw to win a World trip valued at upto $8000. Check Zip media packs for more details.



Zip 100MB disk: (23772) GST Inc: **$25**

10-pack: (21889) GST Inc: **$190**

Zip PCMCIA SCSI accelerator card (35145) GST Inc: **$170**

Zip ISA SCSI Zoom accelerator card (21888) GST Inc: **$85**

Zip drive carry case (31823) GST Inc: **$44**

Zip parallel cable (46305) GST Inc: **$35**

Zip SCSI cable (46304) GST Inc: **$35**

Zip disk labels 20-pack (48059) GST Inc: **$5**

Zip 6-disk wallet (35146) GST Inc: **$23**

Jaz 2GB External Drive (78941) GST Inc: **$645**

Jaz 2GB disk (61652) GST Inc: **$205**

Jaz 2GB 3-pack (57271) GST Inc: **$575**

Jaz 1GB disk (24218) GST Inc: **$199**

Jaz 1GB 3-pack (32844) GST Inc: **$495**

Jaz PCMCIA SCSI card (44744) GST Inc: **$215**

Jaz universal power supply (35154) GST Inc: **$55**

Sales: 1300 13 9999
Fax: 1300 13 6666
Website: www.ht.com.au
E-mail: sales@ht.com.au

Visit our HT@Kmart Kiosks! See Page 2

Verbatim

Check for latest prices & products!

Web Direct www.ht.com.au/cat/verbatim

Backup and Portable Storage

Verbatim

Slim-line PC Card DVD-ROM drive.

Ideal for mobile multimedia applications, 8x DVD-ROM drive & 24x CD-ROM reader.



(B2931)
GST Inc **$700**

Verbatim

PCI Cards

Add super fast serial and parallel port interfaces to any PCI equipped PC.

Priced from $77





Verbatim MirrorSmart - UltraWide SCSIDE Raid Mirror Subsystem



The MirrorSmart provides complete protection for your important files. Uses RAID1 to allow disk mirroring and rebuilding functions. You will never have to worry about hard disk failure again with the MirrorSmart – providing high data security for a low cost. Features: • Drive Hot SWAP and instant rebuild • Built-in RAID On a Chip(ROC) SCSIDE engine• Uses standard IDE Hard Drives

(B2913) GST Inc **$1,079**

Verbatim Digital Memory - CompactFlash



With CompactFlash Digital Film you can increase the storage capacity of any compatible digital camera or PDA. CompactFlash card adapters convert CompactFlash into the PCMCIA Type II Card format.

8MB CompactFlash	(B2919)	GST Inc **$66**
16MB CompactFlash	(B2920)	GST Inc **$78**
32MB CompactFlash	(B2921)	GST Inc **$132**
64MB CompactFlash	(B2922)	GST Inc **$240**
128MB CompactFlash	(B2923)	GST Inc **$520**

Verbatim Digital Memory - SmartMedia



SmartMedia cards expand the storage capacity of any compatible digital camera. The SmartMedia Card Adapter converts SmartMedia Cards into the PCMCIA card standard and is compatible with PCMCIA Type II sockets.

8MB SmartMedia	(B2914)	GST Inc **$44**
16MB SmartMedia	(B2915)	GST Inc **$66**
32MB SmartMedia	(B2916)	GST Inc **$127**
64MB SmartMedia	(B2917)	GST Inc **$231**
SmartMedia Card Adapter	(B2918)	GST Inc **$109**

Verbatim FlashPath Floppy Adapters



Works from your PC's Floppy Disk Drive. FlashPath is an electronic device shaped like a floppy diskette – it fits into and works from a 3.5" floppy disk drive allowing you to easily transfer data from your flash media card to your PC by simply using your existing floppy disk drive.

FlashPath SmartMedia Reader	(B2924)	GST Inc **$160**
FlashPath MultiMediaCard Reader	(B2925)	GST Inc **$160**

Verbatim Digital Card Drives

Exchange data between your PC, laptop, or Digital Camera with our range of PCMCIA Readers/Writers.



USB Port SmartMedia and Compact Flash Card Drive	(B2926)	GST Inc **$95**
USB Port ATA Card Drive	(96056)	GST Inc **$99**
Parallel Port ATA Card Drive	(A0064)	GST Inc **$99**

Verbatim Slim-line PC Card CD-ROM Drive



Add a CD-ROM to your Laptop!

This 24x CD-ROM can connect to any PC Card enabled PC or Notebook and is ideal for mobile computing for notebook users with no CD-Rom drive built-in. The drive is plug-and-play making installation a breeze and the slim-line tray reduces the size of traditional external PCMCIA CD-ROM drives through its lightweight and low profile design. The control panel on the top of the case allows for easy playback of audio CD's.

(97766) GST Inc **$315**

Verbatim CompactFlash v.90 56k Fax Modem



Add full 56k modem capabilities to your Palmtop or handheld Windows CE device. Browse the internet or collect your email from any remote location with a normal phone line.

(83607) GST Inc **$280**

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice. Finance methods subject to approval

bankcard MasterCard VISA efpos AMERICAN EXPRESS Diners Club International

Verbatim

Check for latest prices & products!
Web Direct www.ht.com.au/cat/verbatim

Copying and Connectivity

Verbatim CopySmart One to One CD Duplicator



8x Record, 4x ReWrite, 32x Read

Copy discs with a single button press.
No PC required - or connect to your PC or MAC for it to work as two extra drives. PCI SCSI card and connecting cable included.

(B2904) GST Inc **$1,079**

Verbatim PCI Firewire Cards

Update your PC with firewire! With the included Ulead Video Software and cable you can download directly from digital video camera to your hard drive. Repeater hubs and cards also available.



PCI Firewire Card – 4 ports	(90689)	GST Inc	**$172**
PCI Firewire Card – 6 ports	(A5161)	GST Inc	**$216**
PCI Firewire Repeater Card – 5 port	(A5162)	GST Inc	**$145**
PCI Firewire Repeater – 6 port	(A5163)	GST Inc	**$154**
PCI Firewire Repeater – 10 port	(A5164)	GST Inc	**$204**
6 pin to 6 pin Firewire cable	(B2905)	GST Inc	**$22**

Verbatim USB Hubs & Cards

USB has been designed to allow many devices to be connected in a very easy way to a PC or MAC. Most new PC's have USB, but plug-in cards can add USB ports to older machines. The use of a hub enables a single cable to be expanded to as many as 6 cables.



USB Hub – 6 ports	(79702)	GST Inc	**$99**
PCI USB Card – 2 ports	(84801)	GST Inc	**$49**
USB Network Cable	(B2908)	GST Inc	**$75**
USB to Printer Cable	(84803)	GST Inc	**$33**
Internal 3.5" USB Hub – 4 ports	(B2909)	GST Inc	**$77**
USB to 10/100 Ethernet Adapter	(B2912)	GST Inc	**$119**

Verbatim PCI SCSI Cards

Expand and enhance *your PC with* a PCI SCSI Card. Common IDE drives in today's PC's slow down your machine every time they read or write to a drive. SCSI works almost completely independently of your PC allowing it to run faster during drive activity.



PCI Bus, Ultra-SCSI	(90681)	GST Inc	**$83**
PCI Bus, Ultra-Wide	(90683)	GST Inc	**$168**
PCI Bus, 2 channel Ultra-Wide	(90684)	GST Inc	**$366**
PCI Bus, Ultra2-Wide	(90685)	GST Inc	**$277**

Verbatim ULTRA ATA/100 IDE Acceleration & Expansion Card



PCI IDE Ultra DMA 100 Card: Speed up your PC's new hard disk drives with this PCI plug in Ultra DMA 100 card. Supports transfer speeds of up to 100MB/s with new ATA100 drives, and includes the ability to run up to 4 extra IDE or ATAPI drives on your system.

PCI IDE Ultra DMA 100 Card	(90688)	GST Inc	**$77**
PCI IDE Ultra DMA 100 RAID Card	(B5410)	GST Inc	**$145**

Verbatim Signature III InkJet CD Printer



(89186) GST Inc **$2,850**

Verbatim Inscripta Thermal CD Printer



(B2932) GST Inc **$5,525**

Verbatim Composer Autoloading CD Duplicator

(B2933) GST Inc **$4,763**



Optional Inscripta or Signature III printer available.

Conductor autoloader (B2934) GST Inc **$2,965**

only for Signature III or Inscripta Printer

Verbatim

Check for latest prices & products!

Web Direct www.ht.com.au/cat/verbatim

CD-R/CD-RW: Storage for life

Accessories

CD Travel Case
Lightweight. Scuff proof exterior. Fabric lined disc holders prevent scratching and sticking of CD's.



For 24 CDs: (79583) GST Inc:
$19



For 48 CDs: (79584) GST Inc:
$25

Headset with Microphone



Vertical in-ear stereo headphone with adjustable microphone boom. Ideal for notebook users. Designed for multimedia convenience. Light-weight and compact, adjustable headband.

(77819) GST Inc:
$18

CD Recordable - 10 Pack



74 Min. 650 MB 1x - 16x, 10 pack

(B4329) GST Inc:
$17

Audio CD Recordable and Rewritable



74 min recordable
(A2336) GST Inc:
$3

74 min rewritable
(B4327) GST Inc:
$5

CD Recordable - Singles

74 Min. 650MB 1x - 16x Singles



(74740) GST Inc:
$2

CD Recordable - Printable Surface

74 Min. 650 MB Printable Surface 1x - 16x, 50 spindle pack



*Printable surface also available in jewel-case

(93471) GST Inc:
$79

CD Recordable - 80 Minute Colors



80 Min. 700MB, 1x-12x, colored CD-R's in matching superslim cases 25 pack

(B1355) GST Inc:
$39

CD Recordable - 80 Minute



80 Min. 700MB, 1x - 16x, 10 Pack

(B1354) GST Inc:
$19

DataLife Floppy Diskettes



11th Disk FREE!

The world's No 1 Floppy Disk
DSHD IBM format
3.5" Floppy Disks
*comes in pack
(79452) GST Inc:
$6

CD ReWritable

650MB CD Rewritable 2x-4x



(77492) GST Inc:
$4

650MB CD Rewritable High Speed 4x-10x
(B2658) GST Inc:
$6



Verbatim CD's represent the latest in technology. Featuring a proprietary blue Metal-Azo dye which has the best resistance to sunlight, silver reflective layer for optimum read and write performance and multispeed recording.

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice. Finance methods subject to approval

bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Logitech

Speedy Delivery Australia-Wide

Web Direct www.ht.com.au/cat/logitech

Surround Yourself With The Very Best

QuickCam® Traveler

NEW!

QuickCam Traveler combines easy web communication with the freedom of a digital still camera.

Take it on vacation, to sporting events or parties. It's loaded with features - like a self-timer, macro setting and storage for up to 200 shots. You can adjust resolution or delete duds, then instantly zap the shots into your computer.

QuickCam Traveler is also a video camera that plugs into your PC for all kinds of Internet video: video-conference, video-mail, video-greetings, live broadcasting, animation, even remote video surveillance! With the included video editing software, you can create titles and transitions, add music, narration, sound effects and more!

(A8024) GST Inc: **$278**



QuickCam® Web

The redesigned Logitech QuickCam Web has everything you need to capture video, send video e-mail, make live video calls, post web albums, broadcast over the Internet and more. With its integrated microphone and excellent assortment of easy-to-use software, QuickCam Web is the perfect Internet video camera for everyone.



(A2833) GST Inc: **$162**

QuickCam® Pro 3000

With its CCD sensor, QuickCam Pro 3000 takes pictures and videos with true 640x480 resolution. Use its built-in microphone to make live video calls over the Internet and send pictures and videos with your emails. QuickCam software lets you easily setup a digital surveillance camera and broadcast live video and audio over the web. Add professional titles, fades and wipes to your videos with the included MGI software.



(B0805) GST Inc: **$195**

SoundMan® S-20

Delivers high-definition sound, solid bass for your favourite CD/MP3 songs. Compact, attractive styling. Remote control with headphone jack. Includes digital music CD. 2-year warranty



(A5011) GST Inc: **$105**

SoundMan® SR-30

NEW!

Enhance your multimedia experience with realistic surround sound. Powerful subwoofer and 4 satellite speakers in an attractive package. Remote control with headphone jack. 2-year warranty.



(A5343) GST Inc: **$142**

Cordless Freedom™ Navigator

Logitech's digital radio technology guarantees a reliability that other cordless devices just can't match. iTouch™ keys offer fast access to the Internet and multimedia. Includes Cordless MouseMan Wheel. 5-Year warranty.



(B1477) GST Inc: **$174**

Cordless Freedom™ Pro

Ideal cordless keyboard and mouse combination for exceptional comfort, cordless freedom and aesthetic design. The split layout with a gentle curvature makes it easy to use. iTouch™ keys for easy access to the Internet and multimedia. 5-Year warranty.



(B1478) GST Inc: **$199**

QuickCam Express

(80121)
GST Inc:
$85



Wheel Mouse Optical

(A5318)
GST Inc:
$57



Cordless TrackMan FX

(B0831)
GST Inc:
$145



Cordless TrackMan Wheel

(A2157)
GST Inc:
$110



Cordless TrackMan Live

(77753)
GST Inc:
$267



APR
37

NetComm®

Web Direct www.ht.com.au/cat/netcomm

Australia's Leading Data Communications Products

NetComm® Smart I-Share 56



The smart internet sharing solution for the home or office using just one phone line and internet account. Router, 4 Port ethernet hub, 56k V.90 modem and firewall all in one small box. You can easily network your home or office computers with complete security and save time and money. It's built on a Linux kernel making it ready to be tailored to your business needs. Allows remote location dial up to your own network system. Also includes a serial port for an external ISDN or analogue modem. Works with Windows, Unix & Linux operating systems. 3 year warranty.

(A8868) GST Inc: **$435**



HARRIS TECHNOLOGY™ for all your computer needs!

NetComm® Roadster II 56 Ultra



The Roadster II 56 Ultra is a voice/data/fax modem which lets you transmit and receive faxes and data directly from your desktop. Get on-line in minutes. With UltraConnect technology built-in, this 56Kbps modem negotiates more aggressive transmission speeds which means you surf on a faster connection. The Roadster II 56 Ultra is a great value package to suit online gamers, small office user and the Internet power user. Its ease of use also makes it ideal for the first time user. · Supports Dual K56Flex & V90 Technology · External Data / Voice / Fax and Speakerphone modem · Slim-line design Error correction and data compression, · Distinctive Ring Simultaneous Voice and Data · Maximum speed of 56,000bps (download only), 33,600bps, V.34, V.32bis, V.42bis, V.42, MNP2-4, MNP5, MNP10EC, · Plug n' Play

(61194) GST Inc: **$195**

HARRIS TECHNOLOGY™ @ Target.

Ballarat (VIC), Camberwell (VIC) & Epping (VIC)

Target Shoppers! Not all products are in-store, but consulting & advice available on all items

NetComm® Wave SP56



The revolutionary design of the Netcomm Wave takes up less desk space than almost any other product on the market. Allows you to use your PC just like a hands-free telephone with up to 9 password protected mailboxes. Dual V90 and K56flex compatibility. Simultaneous Voice & Data. Built in Speakerphone and VoiceMail. Digital line protection. Includes headset, desktop faxing and voice software.

(B1388) GST Inc: **$185**

NetComm® Cyber Sentinel



Cyber Sentinel automatically filters & alerts via email against undesirable Internet traffic. It is the most advanced Internet monitoring software available. Includes Free Internet Access! Is ideal for home, school, library or office use. Protects against unwanted illegal downloads of pornography. Lets you decide what they access on the Internet, when they can access it and how much time is spent. Allows or denies access to email news groups, real time chat groups or web browsing by the individual user. Monitors all Windows-based applications in real-time.

(A8872) GST Inc: **$47**

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval.

Dynalink

Check for latest prices & products!

Web Direct www.ht.com.au/cat/dynalink

Modems and Multimedia

Full Product Info: www.dynalink.com.au

Dynalink 56K V.90 Modem

"Good value for money... ease of setup and use is excellent... consistently connects at high speeds." *PC World Nov 99.*



- V.90 / K56flex dual-mode *for high Internet compatibility*
- Plug & play, plus friendly QuickGuide for easy installation
- Send and receive faxes from your PC
- Supports FaxStream DUET, Caller ID, Speakerphone Mode & VoiceMail.

(54361) GST INC **$128**

5 Year Warranty

Dynalink USB Modem



- Super-easy Installation.
- Free-up Slots and IRQs.
- No power supply, no messy cables.
- Dual-mode V.90, fax machine, answer machine.
- Pocket sized for convenience and style!

(A2298) GST INC **$138**

5-Year Warranty

Dynalink PC Card



- PCMCIA V.90 56k Modem
- Send & Receive Faxes
- No dongle required

(A2831) GST INC **$129**

5-Year Warranty

Dynalink TV Tuner Video Capture Card



"One of the two best cards in terms of picture quality" *APC, July 9.* Watch TV on your PC & capture incoming video (e.g. from CamCorder). Fully featured, including Teletext & remote control. Resizable window, right up to full-screen (640x480).

Standard: (72860) GST INC **$125**

With FM Tuner: (78482) GST INC **$155**

Dynalink USB WebCam



- Turn your PC into a home video workstation.
- Capture video and digital shots.
- Affordable & simple video conferencing.
- Video software VP-EYE suite included.
- E-mail video clips with sound
- Home security capabilities.
- USB simplicity.

(A2832) GST INC **$99**

Dynalink Internal 56k V.90 Modems



ISA: All the features of the External. Full Hardware w/ jumpers. 5-Year Warranty.
(77577) GST INC **$137**

PCI: PnP, Send & Receive Faxes, Phone Answer Machine.
(72909) GST INC **$70**



HARRIS TECHNOLOGY... *WOULD LIKE TO WISH YOU A HAPPY EASTER*

Microsoft®

Web Direct www.ht.com.au/cat/microsoft

Throw Away Your Mouse Pad!



Intellimouse Optical

Is the second generation of Microsoft mice to use the breakthrough IntelliEye optical sensor technology. The optical sensor provides smooth and precise movement. Optical also is equipped with a wheel for efficient scrolling and has additional buttons to enhance forward and back navigation on the Internet.

(98271) GST INC: **$75**



NO MOUSE BALL!

Intellimouse Explorer



Featuring the most significant improvements to the mouse since it was invented 30 years ago. Intellimouse Explorer is the first mouse to give you superior precision.

(84211) GST INC: **$85**

Wheel Mouse Optical



Brings all the precision and durability of IntelliEye Optical technology to a simple, affordable mouse. Revolutionary optical sensor- no mouse ball.

(A8710) GST INC: **$53**



HARRIS TECHNOLOGY... for all your computer needs!

Natural Keyboard Pro

- 19 hot keys allow you to browse the web, check e-mail or play a CD directly from your keyboard.



- Two USB ports allow you to plug USB devices directly into your keyboard.
- Comfortable, natural design.

(87385) GST INC: **$99**

Internet Keyboard Pro

- 19 hot keys allow you to browse the web, check e-mail or play a CD directly from your keyboard.



- Two USB ports allow you to plug USB devices directly into your keyboard.

(A1783) GST INC: **$77**

APR 39

Sales: 1300 13 9999 **Fax:** 1300 13 6666 **Website:** www.ht.com.au **E-mail:** sales@ht.com.au **Order on-line** www.ht.com.au

intel

Fast delivery Australia wide

Check for latest prices & products!

Web Direct www.ht.com.au/cat/intel

PC Cameras

Collect 500 Bonus Fly Buys points when you purchase A6750, B1990, B4373 or A6749 between 20/03/01 - 30/04/01



Intel® Pocket PC Camera

Get a great PC camera to go. The versatile Intel® Pocket PC Camera lets you record 2 minutes of video and take up to 128 high-quality pictures either at or away from your PC. Included software lets you make enhanced video phone calls with friends and family over the Internet.



(A6750) GST Inc: **$379**



Intel® Pro PC Camera

One quality PC camera lets you make video phone calls and import video to your PC from your camcorder or VCR! The Intel® PC Camera Pro Pack with the versatile Intel® Pro PC Camera also lets you record video and take snapshots. Then do more with your pictures using the included suite of integrated software.



(B1990) GST Inc: **$240**



Intel® Deluxe PC Camera

Turn your PC into a video phone! The Intel® Deluxe PC Camera includes the Intel® PC Camera and fully-integrated software. Make video phone calls over standard dial-up, broadband Internet connection or regular telephone lines.* Capture video and stills to personalize email postcards. Fun camera games are also included. All in one affordable package.

*Requires Windows 98 and video-ready modem



(B4373) GST Inc: **$198**



Intel® Easy PC Camera

With the Intel® Easy PC Camera, sharing pictures with friends and family over the Internet is a snap. You get a great PC camera and a suite of software for making video phone calls and sending personalized email postcards.



(A6749) GST Inc: **$100**



HARRIS TECHNOLOGY™ for all your computer needs!

HARRIS TECHNOLOGY™ @ Kmart

Broadway (Sydney)
Burwood (Melbourne)

Kmart Shoppers!

Not all products are in-store, but consulting & advice available on all items

APR
40

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval

AGFA imaging

Web Direct www.ht.com.au/cat/agfa

New Tools for the "E" Generation

SnapScan e25 USB NEW

600x1200ppi (9600ppi maximum), 42bit flatbed scanner with USB interface. Features one-touch buttons for scanning direct to e-mail, printer or ScanWise. Includes 3 interchangable coloured handles. Software package includes AgfA ScanWise, Readiris, Corel PrintOffice 2000 and AGFAnet Print Service. Compatible with Win98/2000/Me and MacOS.



(B6378) GST Inc: **$255**

SnapScan e20 USB NEW

600x1200 optical resolution (9600 maximum), 36bit, USB interface, Mac & Win98/Win2000Me compatible. Includes 3 interchangeable coloured handles, Software package includes Agfa ScanWise, Readiris and Corel PrintOffice 2000

(B1175) GST Inc: **$195**



SnapScan e40 USB



1200x2400ppi (9600ppi maximum), 42bit flatbed scanner with USB interface.Software package includes Agfa ScanWise, ReadIris and Corel PrintOffice 2000. Compatible with Win98/2000/Me - MacOs

(A5009) GST Inc: **$290**

SnapScan e50 USB



1200 x 2400ppi (9600 maximum), 42bit flatbed scanner with built in transperancy module for transperancy and negative scanning. Features one-touch buttons for scanning direct to email, OCR, printer or image manipulation software. USB interface. Software package includes: Agfa ScanWise, Readiris and Corel PrintOffice 2000.

(99759) GST Inc: **$390**

ePhoto CL18 USB



Dual mode (still image and live action), compact, easy to use digital camera with USB interface and a resolution of 640x480 pixels. Stores 16-32 images on 2MB internal (non-removable) memory card. Extensive software package includes: Agfa Twain Driver, ArcSoft Video Impression, Corel PrintOffice and PrintHouse (with Agfa PhotoGenie QuickFix technology), MicroSoft Net Meeting, AGFAnet Print Service.

(99757) GST Inc: **$265**

ePhoto CL20 USB



Dual mode (still image and live action) megapixel digital camera with USB interface. Resolution of 1280x960 pixels (with PhotoGenie). Stores 10-30 images on 1MB internal memory with a CompactFlash slot for optional storage on CompactFlash cards (card not included). Extensive software package includes: Agfa Twain Driver, AgfaCam Mounter, Agfa PhotoWise 3.0, ArcSoft Video Impression, MicroSoft Net Meeting, AGFAnet client software, Acrobat Reader.

(B1153) GST Inc: **$340**

ePhoto CL30Clik! USB



The fantastic ePhoto CL30 now available with built-in Iomega Clik! Drive. Mega-pixel digital camera with USB interface and a resolution of 1440x1080 pixels. Features an optical viewfinder and 1.8" colour LCD screen. Auto focus lens with 2x digital zoom and macro function.

(89409) GST Inc: **$1,065**

Collect 500 Bonus Fly Buys points when you purchase B6378, B1175 or A5009 between 20/03/01 - 30/04/01



DuoScan T1200 SCSI-2. 36 bit. Transparency scanning. Opt. res. 600x1200ppi (74498) GST Inc: **$1,263**



DuoScan T2500 SCSI-2. 36 bit. Transparency scanning. True opt. res. 1250ppi (74499) GST Inc: **$7,946**



DuoScan HiD (92981) GST Inc: **$3,639**

Document Feeder DuoScan T1200 (75581) GST Inc: **$405**

Batch Slide holder set for DuoScan T1200. (75582) GST Inc: **$200**

Sales: 1300 13 9999 **Fax:** 1300 13 6666 **Website:** www.ht.com.au **E-mail:** sales@ht.com.au

Do you want FlyBuys with that?

invent

Check for latest prices & products!

Web Direct www.ht.com.au/cat/hp

HP DeskJets & ScanJets

HP Papers

Premium Plus Photo Paper Glossy A4, 20 sheets (84904) GST Inc: **$25**

HP Premium Photo Paper A4, 15 sheets (54010) GST Inc: **$14**

HP Premium Photo Paper A3, 20 Sheets (58635) GST Inc: **$54**

HP DeskJet 930C



Compact Photo-Quality Colour InkJet Printer

- Alternative 2400x1200dpi mode on photo paper with HP PhotoREt 3
- Excellent results on all types of media in all modes
- Prints up to 9ppm black and 7.5ppm colour

(95761) GST INC **$295**

HP DeskJet 990C



Best Photo-Quality plus Premier Business Printing

- Infrared printing from PDAs, notebook computers, and other mobile devices.
- Up to 17 ppm in black, 13 ppm in color
- Optical sensor detects paper type, then selects the ideal print mode HP PhotoREt III

(B1967) GST INC **$760**

HP DeskJet 1125C



HP's affordable wide-format colour printer

- Print any size from postcards (A6) to posters (A3+)
- Prints up to 7ppm black and 5.5 ppm colour
- Booklet printing - two-sided printing with automatic arrangement of pages for binding

(A2290) GST INC **$556**

HP ScanJet 3300C



Easy scanning and copying

• Color copy or scan at the touch of a button • Quick and easy setup with USB installation • IncludesHP ScanJet Copy Utility and Adobe® PhotoDeluxe™ 3.0 image editing and creative projects software • HP PrecisionScan LT with integrated OCR makes it easy to scan editable text in minutes

(81725) GST INC **$153**

Fly Buys.

Collect **Fly Buys** points on your computer hardware & software when you purchase from HARRIS TECHNOLOGY.

HP ScanJet 4300C



Scan/copy/e-mail from a brand you can trust

- WYSWYG compatability
- Dual I/O: USB & Parallel
- 600 dpi optical - 36 bit colour
- Windows 2000 support
- Precision Scan LTX software
- Corel Print House 2000

(A2286) GST INC **$256**

HP ScanJet 5300C



One-step access makes it easy to scan, copy, e-mail, or fax your images

- Ideal for: Office managers wanting versatility and expandability & first-time scanner users • Optical resolution 1200 dpi, enhanced resolution 9600 dpi, bit depth 36-bit • Maximum document size 8.5 x 11.7 in, 8.5 x 14 in with optional ADF

(93770) GST INC **$439**

APR 42

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval.

hp invent

Web Direct www.ht.com.au/cat/hp

HP OfficeJets & CDRW

Check for latest prices & products

HP OfficeJet 725

LOW PRICE

1. Send color faxes when PC is on or B&W faxes any time.
2. Scan color documents to email in one step. Outstanding resolution and photo quality color enable you to create professional documents.
3. Four office products (printer, fax, scanner and copier) in the space of one.
4. Intuitive controls make it easy to use right out of the box.
5. Easy software makes switching between tasks simple.
6. Trade faxes in color with any other color fax machine!
7. Backed by Customer Care



(80568) GST INC **$430**

HP OfficeJet K60

Compact, All Colour, sheetfed Print, Copy, Scan & Fax all-in-one

• Print up to 2400 x 1200 dpi colour, up to 600 x 600 dpi black with HP PhotoREt 3 • High-quality scanning captures subtle details for accurate reproduction of originals at 600 x 1200 dpi optical (up to 2400 dpi enhanced) and 36-bit colour



(B1868) GST INC **$769**

HP OfficeJet G85

All Colour: Printer, Copier, Scanner & Fax

Prints at up to 12 ppm black, 10 ppm color using 2400 X 1200 dpi colour with HP photoREt 3,as well as flatbed exceptionally high-quality 36-bit scanning, faster copying speeds, and upgradeable networking capability which allows one unit to be shared by several PCs. Each model combines a color printer, scanner, and copier. Also a convenient walk-up color fax.



(A0062) GST INC **$1,109**

HP CDRW 9140i & 9500i

Model	9140i	9500i
Speed	**8x4x32**	**12x8x32**
Copy & create universally readable CDs	HP MyCD	HP MyCD
CD creation using drag & drop	Adaptec Direct CD 3.01	Adaptec Direct CD 3.01
High speed CD-RW disc formatting	HP Fast Format	HP Fast Format
Full system backup	HP Simple Backup	HP Simple Backup
Mutlimedia organiser		Broderbund Multimedia Pro
Create stationery, greeting cards & more		Corel Print Office 2000
MP3 downloads	HP Music Jukebox	HP Music Jukebox
CD labelling	CD labeler	CD labeler
Included media	1xCD-R	1xCD-R, 1x high per, CD-RW
Buffering	2MB	4MB
Able to create all type of CDs	Yes	Yes
Able to format CD-RW disc under 3 minutes	Yes	Yes
Able to do a full system backup	Yes	Yes
Download MP3 files & store on CD	Yes	Yes
Download MP3 files onto CD to play in a discman	Yes	Yes
A solution with a CD labeler	Yes	Yes
Write & read high performance CD-RWmedia	Write- No, Read- Yes	Yes
Write & read normal CD-RW media	Yes	Yes
Write & read CD-R media	Yes	Yes
Part #	(A8090)	(A8087)
Inc GST	**$349RRP**	**$560**



Easiest to Install & Use!

You can create data CD's, audio CD's, photo CD's and multimedia CD's. You can either write once (CD-R) or erase and re-write (CD-RW). Each CD holds up to 650MB if data or 74mins of audio.

Ask about... Extended Harris Technology Warranty

- ☐ Extend to a total of 3 Years Return to Base
- ☐ Extend to a total of 5 Years Return to Base
- ☐ Upgrade Return to Base of Warranty Extension to On-Site

Web Direct

See Web Direct Link (at top of page) for all your HP ink and paper needs

Sales: 1300 13 9999 | Website: www.ht.com.au
Fax: 1300 13 6666 | E-mail: sales@ht.com.au
Delivery Australia-Wide

hp invent

Speedy Delivery Australia-Wide

Web Direct www.ht.com.au/cat/hp

LaserJet 4100 Series Printers

Fly Buys.

Collect Fly Buys points on your computer hardware & software when you purchase from HARRIS TECHNOLOGY.



HP LaserJet 4100 Series

hp LaserJet 4100 series workgroup printers deliver the highest value in their class,with more speed,more capacity and new 'intelligent ' e—enabled printer- management features.

HIGH PERFORMANCE

• Super fast printing at 24ppm A4 print • 250MHz processor ensures quicker return to application • complex documents print faster with 16MB/32MB memory • 12 second first page out • HP Pro-Res & FastRes 1200 dpi print quality at full speed • dynamic RIP-once for faster processing of multiple original prints • duty cycle of 150,000 pages/month

INTELLIGENCE

• Job retention ability allows print jobs to be stored on the printer so that users can walk up and print with the control panel • proof and hold – print one copy for proofing and hold the remaining copies until released from the printer 's control panel by user • private printing –print job will only be released when user key in the 4 digit pin from the control panel • quick copy – make multiple copies of last print job from control panel • Stored jobs –fax covers,time sheets,calendars and other shared documents to be stored electronically at the printer eliminates the need for preprinting

Web Direct

See Web Direct Link (at top of page) for all your HP ink and paper needs

HOT NEW PRODUCT

LaserJet 4100 (base unit) (B8399) GST INC **$2,179**

LaserJet 4100n (B8400) GST INC **$2,715**

LaserJet 4100tn (B8401) GST INC **$3,240**

LaserJet 4100dtn (B8402) GST INC **$3,839**

APR 44

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval.

LaserJet and InkJet Printers

HP LaserJet 6L pro

HOT NEW PRODUCT



•6ppm • economode cuts printing costs by 50% • power save mode reduces energy costs • 18-second first page out • patent instant-on fuser eliminates printer warm-up time • fast return to application • supports a wide variety of media sizes and types (letter, envelopes, transparencies and card stock) • Supports DOS and Windows 3.1, 3.11,95,98,NT 4.0 environments

(B4399) GST INC **$587**

HP InkJet 2250/2250TN



2250 (A3362) GST INC **$1,345** **2250TN** (A3363) GST INC **$1,929**

The HP Business Inkjets 2250 and 2250TN come with all the features of the *2200, and also include:* • HP PCL5Ce, HP PostScript level 2 emulation • 24MB RAM upgradeable to 88MB • Two 96MHz Motorola processors on board • HP JetDirect 600N internal print server (2250TN only) • Additional 250-sheet input tray (2250TN only)

HP LaserJet 1100 Printer



1100 Printer (70095) GST INC **$709**

1100A Printer- Copier- Scanner (70096) GST INC **$845**

HP's JetPath technology allows you the flexibility to expand the LJ 1100 into an all-in-one performer when your business needs grow. Crisp, *sharp 600dpi laser printing.* 8ppm. 2MB RAM.

HP LaserJet 4550 Series



HP Colour Laserjet 4550 A4 16PPM 64Mb (B2381) GST INC **$3,915**

HP Colour Laserjet 4550N A4 16PPM 64Mb 10/100 (B2382) GST INC **$4,429**

The HP Color LaserJet series printers are ideal for professional end users in workgroups and business departments who need to create documents which offer a competitive advantage in selling their ideas, products or analysis to external customers or internal managers through proposals, reports and newsletters.

HP LaserJet 3150 Series



Printer, Fax, Copier, Scanner! (93899) GST INC **$1,317**

A networkable all-in-one device that delivers high quality output 600 dpi enhanced. Prints, scans, copies up to 6ppm. 6 second fax sending. Separate paper paths allow you to print while sending broadcast faxes; scan while sending a print job; or copy while sending or receiving a PC fax. Networking capabilities.

HP LaserJet 8150 Series



HP Laserjet 8150 (B1981) GST INC **$4,529**

HP Laserjet 8150DN (B1982) GST INC **$5,930**

HP Laserjet 8150N (B1986) GST INC **$5,183**

The new HP LaserJet 8150 series is designed to grow with your business and its needs. It delivers high-volume, high-speed black and white prints and copies for small workgroups to large departments.



HARRIS TECHNOLOGY. for all your computer needs!

Ask about...

EXTENDED HARRIS WARRANTY

- ☐ Extend to a total of 3 Years Return to Base
- ☐ Extend to a total of 5 Years Return to Base
- ☐ Upgrade Return to Base of Warranty Extension to On-Site

IT'S YOUR CHOICE PROMO

Buy a HP printer for your office and receive FREE selected accessories, extended warranties or cash back. For more information, visit our website at www.hp.com.au/itsyourchoice/gifts or call us on 13 23 47. OFFER ENDS 06/04/01

Sales: 1300 13 9999
Fax: 1300 13 6666
Website: www.ht.com.au
E-mail: sales@ht.com.au

Visit our HT@Kmart Kiosks! See Page 2

Canon

Web Direct www.ht.com.au/cat/canon

Can on a Canon, Can Do!

BJC-1000SP

Super Economy Mode in Black/White & Colour

- Vivid colours, on plain paper.
- Photo Mode colour, optional PhotoRealism.
- Auto image improvement.
- Print banners, up to 6 A4 pages, envelopes, transparencies, glossy photo paper, high gloss film & T-shirt transfers.



(A1792) GST INC **$99**

BJC-2100SP

High performance at a low price - the ultimate printer!

USB

- Ultra compact design.
- Up to 5ppm in monochrome.
- Up to 2ppm in colour.
- 4-colour photo printing.
- Optional colour image scanning.
- Range of driver features.
- Banner printing.
- USB + parallel interface.



(A3173) GST INC **$137**

LBP1000



10 PPM
1200 dpi
PCL6
4 MB RAM

(95983) GST INC **$1,070**

A4 BJC- 3000



(94499) GST INC **$230**

- Up to 9ppm print speed black
- 1440 dpi
- Separate replacement colours

A3/A4 BJC- 6500



(95962) GST INC **$579**



N340P

300x600dpi
(A8919) GST INC **$99**

A4 Colour parallel flatbed scanner. Fast 1 pass scanning. Unique LIDE contact image sensor technology. 600x1200dpi. Incredibly thin (39mm).

BJC-6200

Compact design and uncompromised performance!

- 6-colour photo printing.
- Optional colour image scanning.
- Separate colour ink cartridges!
- Up to 10ppm in monochrome.
- Up to 7ppm in colour.
- USB + parallel interface.
- 1440 x 720 dpi.

USB



(A3507) GST INC **$335**

LBP800

8ppm Desktop laser

- 300x300dpi, 600x600dpi
- 2,400dpi with text & line smoothing.
- 2,500 pages per cartridge (5% cover).
- 512K buffer.
- Win® 95, 98 and NT 4.0.



(83787) GST INC **$485**



N640P

1200x2400dpi
(A7655) GST INC **$128**

MOST COMPACT, LIGHTWEIGHT FLATBED SCANNERS AVAILABLE!

- OmniPage OCR software included (N650U & N1220U Only) Full V9.0
- Plug & Play
- Fully integrated software package

NEW RANGE!



- Silent & fast scanning
- Super slim & compact

N650U

600x1200dpi.
(A3522) GST INC **$169**

N1220U

1200x2400dpi.
(A3523) GST INC **$254**

FB1210U

1200x2400dpi
(A3524) GST INC **$425**

D660U



With 42 bit output for Windows 98, 2000 and USB Mac Systems. Fast one pass USB scanning. 600x1200dpi film scanning via **film adaptor built-in to scanner lid.**

1200x2400dpi
(A8903) GST INC **$254**

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval.

FUJI XEROX

Web Direct www.ht.com.au/cat/fuji

Fuji Xerox - Think in colour

Expect even more from an office printer

Phaser 1235

(B2971) GST Inc:

$8,069



Phaser 2135

(B8459) GST Inc:

$Call

Get it from a Phaser

The gap between colour and mono printers has been bridged. Black & white or colour prints are now available from Fuji Xerox's Phaser Printers at the same speeds as many traditional black and white only printers. Don't compromise your large workgroups when you can have exceptional colour and black & white performance from one device.

The new Phaser 1235 and 2135 laser class colour network printers have set a new standard in single pass printing. The Phaser 2135 provides 21ppm colour & 26 ppm black & white at 1200dpi resolution. It is fully networked, with brilliant output including print sizes up to A3 and the option of duplexing. The Phaser 1235 speeds along at 12ppm colour or 20 ppm black & white, all at 1200dpi with sizes up to A4.

No compromise at an entry level price

Phaser 750 produces best in class capabilities for all purpose mono and colour printing at new low prices.

- Photographic quality 1200x600dpi
- Prints up to A4 size, optional duplexing
- 10/100 BaseT networking
- 5ppm colour, 16ppm mono



4 models available from

(A1401) GST Inc:

$4,799

Fast brilliant colour at the lowest of costs

Phaser 850 delivers powerhouse speeds and low total cost of ownership with exceptionally low running costs. Includes free life time supply of black toner...no catches!

- Vibrant colour at 800 dpi
- 14 ppm colour and mono
- Print sizes up to A4
- 10/100 BaseT networking



3 models available from

(90162) GST Inc:

$5,719

When critical detail is required...

Phaser 790 comes equipped with the best colour and image quality for pre-proofing and image intensive applications.

- latest colour matching and image control tools
- Adobe PostScript 3 & PCL 5
- 6ppm colour & optional duplexing
- Up to 13" x 18" A3 Plus prints



2 models available from

(B2972) GST Inc:

$13,859

Ask about... Extended Harris Warranty

Fly Buys.

Collect **Fly Buys** points on your computer hardware & software when you purchase from HARRIS TECHNOLOGY.

RENTSMART

SEE PAGE 16 FOR MORE DETAILS

The figures quoted are based on a per week basis over 3 years. To approved persons, Terms and Conditions apply.

APR 47

Sales: 1300 13 9999
Fax: 1300 13 6666

Website: www.ht.com.au
E-mail: sales@ht.com.au

Visit our HT@Target Kiosks! See Page 2

Pioneer

Web Direct www.ht.com.au/cat/pioneer

Multimedia: Blank Media & DVD-ROM

Pioneer CD-R 12x 700MB Media

- Premier optical discs professional use CD-R
- Larger Writing/Playback Margin
- 12x writing speed capable
- Phthalocyanine Dye



Speedy Delivery Australia Wide



Slim Jewel Case Carton of 20
CDM-K80F20 (B8408) GST Inc: **$27**

100 Disc Spindle
CDM-K80D100
(B8421) GST Inc: **$120**

50 Disc Spindle
CDM-K80D50
(B8420) GST Inc: **$65**



Now you can collect Fly Buys points when you purchase from HARRIS TECHNOLOGY.

Pioneer 16x DVD-ROM Upgrade Kit with Hardware Decoder



• Slot loading 16X drive (40X for CD) with installation accessories • VideoLogic MPEG2 Decoder Card providing output for External Video & Dolby • Digital (5.1) Audio • Includes 2 DVD-ROM games (Baldur's Gate & Blade Runner) • Bonus 5 DVD movie rental vouchers from Video Ezy valued at $30 • 2 Year Warranty

DVD-A05SKIT (A4327) GST Inc: **$520**

Pioneer 16x DVD-ROM Upgrade Kit with Software Decoder



• Slot loading 16X drive (40X for CD) with installation accessories • Power DVD Software Decoder • Bonus 5 DVD movie rental vouchers from Video Ezy valued at $30 • 2 Year Warranty

DVD-A05SDXE (B0750) GST Inc: **$274**

Web Direct

See the Web Direct Link for more products and latest info!



Pioneer DVD-R Media

Jewel Case • Memory-capacity of 4.7GB • Suitable for DVD Video & Data backup • Playable on both DVD-Video players & DVD-ROM drives • Commercial and Home DVD-Video production • Large sized data archive storage. (not for use with Pioneer DVRS201 authoring drive)

DVS-R4700SP (B4506) GST Inc: **$65**

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval.

NEW MAGIC

Fast delivery Australia wide

Web Direct www.ht.com.au/cat/newmagic

Professional Video Tools

Hauppauge!



(89063) GST INC **$149**

• Watching Television on your computer has never been easier with WinTV • Watch Live TV (16 Channels) or video on your PC while surfing the Web • Capture motion video and high quality video stills 1600x1200 pixels, BMP, TIF, TGA, GIF, JPEG formats • Video clip capture in Microsoft AVI file format - from TV or any video source • Video conference over the Internet with Microsoft NetMeeting or CU-SeeMe • Win 95, 98, NT 4.0, Win2000 and Linux.

Hauppauge TV GO - FM (89064) GST INC **$209**
Hauppauge TV USB (89066) GST INC **$270**
Hauppauge TV USB - FM (98455) GST INC **$314**
DV Wizard (A8925) GST INC **$267**
Hauppauge PVR (B2593) GST INC **$669**

SONIC FOUNDRY



NEW SOUND FORGE V5.0

Sound Forge is Sonic Foundry's award-winning two-track digital audio editor. Sound Forge includes a powerful set of audio processes, tools, and effects for manipulating audio. This one-of-a-kind application is perfect for audio editing, audio recording, effects processing and media encoding. Combine Sound Forge with any Windows-compatible sound card to create, record, and edit audio files. The clean and familiar Windows interface makes editing a breeze. It also has built-in support for video and CD burning and can save to a number of audio and video file formats, including WAV, WMA, RM, AVI, and MP3.

Sound Forge 5.0
FULL VERSION (B8616) GST INC **$850**
Sound Forge XP 5.0
LIGHT VERSION (B8619) GST INC **$130**
Video Factory (A9258) GST INC **$195**



HARRIS TECHNOLOGY
WOULD LIKE TO WISH YOU A HAPPY EASTER



Now you can collect Fly Buys points when you purchase from HARRIS TECHNOLOGY

canopus

New Added Features!!!

EZDV & DVRaptor

NEED TO EDIT YOUR DV, AUTHOR A DVD AND STREAM VIDEO FROM YOUR WEB SITE...

- DV editing: Bullet-proof, high speed Canopus DV codec.
- DVD creation: Precise, fast MPEG 1&2 encoding straight from the editing timeline.
- Create VideoCD and Windows Streaming Media directly from the editing timeline with a single click. Fast near real time encoding.
- Compatible with DV and Digital-8 cameras
- Automatic frame accurate camera control & tape logging.
- Easy, fast and ultra stable Edit software.
- Captures selected clips or complete videotapes
- Comprehensive spiral bound manuals including great tutorials.
- SoftXplode 2D, 3D and organic special effects software.
- SmartSound royalty free music software.
- SpruceUp! DVD authoring software (Trial version).



EZDV
(97877) GST INC **$499**
with Media Studio Pro (V6.0)
(A8924) GST INC **$749**

DV RAPTOR
(A8997) GST INC **$999**
with Adobe Premier 5.1
(89050) GST INC **$1,249**

DV STORM
(B4401) GST INC **$2,950**
with Adobe Premier 5.1
(B4406) GST INC **$3,200**

DVStorm

Introducing DVStorm, a real-time DV editing system that combines a high performance feature set with stability, reliability, and affordability. Boasting render-free, real-time digital video editing, DV and Analogue input/output, MPEG output for DVD, plus Web streaming capabilities, DVStorm is the ultimate digital video editing experience!

Web Direct

See Web Direct Link (at top of page) for more products and latest info!

Sales: 1300 13 9999
Fax: 1300 13 6666
Website: www.ht.com.au
E-mail: sales@ht.com.au

See Page 2 for Locations

matrox

Web Direct www.ht.com.au/cat/matrox

Powerful 2D/3D Video Graphics Card

The undisputed industry leader in 2D and 3D Image quality.
Matrox Millennium G450 Dual Head Graphics Acceleration Card

The Matrox pioneered DualHead display, introduced and made popular by the award winning Matrox G400 series, making the millennium G450 the most versatile and feature-rich graphics card on the market today. DualHead offers a host of display features and software utilities that will change the way you work and play on your PC.

FLY BUYS 500 BONUS POINTS

Collect 500 Bonus Fly Buys points when you purchase B6886 between 20/03/01-30/04/01





Millennium G450 (B6886) GST Inc: **$395**

DualHead Display offers a host of options designed to meet your particular needs.

- DualHead Multi-display
- DualHead Zoom
- DualHead DVDMax
- DualHead TV Output
- DualHead Clone



G45+MDHA16LEB OEM (B3108) GST Inc: **$229**

G45+MDHA16DB OEM (B3110) GST Inc: **$289**

G45+MDHA32DB OEM (B3111) GST Inc: **$387**

Incredibly Sharp and realistic image quality

- UltraSharp, Lightning-fast 360MHz RAMDAC
- Vibrant Color Quality (VCQ2)
- Environment Mapped Bump Mapping which adds a new level of visual realism to many game environments
- More advanced 3D features e.g. Stencil buffering, trilinear filtering, alpha blending etc.

Powerful 2D and 3D acceleration

- Matrox G450 256-bit DualBus
- 3D Rendering array Processor
- Advanced AGP support
- There are over 35 games that support DualHead and/or Environment-Mapped Bump Mapping (EMBM), including: Star Trek, Armada, Baseball 2000, Destroyer Command, Battlezone II, Combat Commander, The Rift to name a few.

imation
imaginative solutions.

Web Direct www.ht.com.au/cat/imation

Burn your own CDs & more!

Imation's new CD Burn-R lets you create custom CDs from your music and photo collections. Use your new Burn-R to share your creations with friends or to easily back up your files. Comes complete with the internal drive, software and even Imation CD-R and CD-RW discs to get you started.

MP3.COM - FREE Multimedia CD from MP3.COM inside, Includes 100 incredible songs. Great music, great offers and a whole lot more

HARRIS TECHNOLOGY Target.
Ballarat (VIC), Camberwell (VIC) & Epping (VIC)

Target Shoppers! Not all products are in-store, but consulting & advice available on all items

- Burn your own custom audio, music, or multimedia CDs.
- Record, change your mind, and re-record up to 1,000 times on just one Imation CD-RW disc.
- Easily, safely and quickly back up files with 8x recording speed.
- Retrieve files with lightning fast 32x read speed—Fast enough to be your primary CD-ROM drive too.
- Ready to use—includes software, 1 Imation CD-R disc and 1 Imation CD-RW disc.
- Reliable—From Imation, a leading supplier of branded removable data storage media.
- Windows 95/98/NT/2000 compatible.



Imation CD Burn-R Internal 8x4x32 CD-RW Drive

(B6520) GST INC **$329**

APR 50

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.
Finance methods are subject to approval.

PINNACLE SYSTEMS

Web Direct www.ht.com.au/cat/pinnacle

Video Editing Hardware



PINNACLE STUDIO VCD

- PC users with CD Writers can now record videos on a CD in VCD format.
- For playback in DVD players.
- MPEG1-IBP real time encoder solution.
- Simple trimming tool for recorded MPEG stream.
- Includes **full version of NERO V5 CD writer software.**

(B8630) GST INC **$210**



PINNACLE STUDIO ACTION

- Specially created for kids in conjunction with LEGO, suitable for ages 8 and over.
- Create and edit movies, capture video from any camcorder or VCR.
- Show your movies on your PC, email it, or put it on the web.
- Includes USB/video capture device and easy to use Studio Action video editing software.

(B8631) GST INC **$180**



PINNACLE STUDIO DV

- Easy-to-use desktop video editing solution.
- Capture hi-quality DV, miniDV, Digital 8 video footage into your PC.
- Edit & make home videos with STUDIO software.
- Control your DV or D8 camcorder from your PC.
- Output back to DV tape or multimedia CD-ROM.

(87677) GST INC **$298**



PINNACLE STUDIO ONLINE

- Create movies to be viewed over the Internet.
- Includes Studio video editing software.
- Comes with USB video capture device.
- Free membership in Pinnacle Systems' video sharing website, with free online storage for your digital movie files and a complete, personal email package to let everyone know where to view them.

(B8632) GST INC **$190**



PINNACLE STUDIO DVPLUS

- DV editing with Analogue output (S-VHS, VHS), DV input and output.
- Capture footage in low resolution with the SmartCapture, which then creates the movie in full resolution with minimum disk space usage.
- Audio effects.
- Create CDs or files for the Internet or email.
- Outputs MPEG-1 & 2, Real Networks and AVI.

(A8908) GST INC **$575**



PINNACLE DV500 PRO

- Dual stream- real time, analog and DV video editing solution.
- Edit existing VHS, S-VHS, Hi-8 and Video 8 devices. As well as the new generation DV, miniDV, DVCAM, DVC-Pro or Digital 8 standard devices, all in native DV format.
- Includes upgrade from Adobe Premiere 5 to 6, Minerva Impressions CD-Pro, Pixelan's Video Spice Racks, Pinnacle's Title Deko and Free FX, real-time 2D effects, Intelligent 3D rendering, Sonic Foundry' and Hollywood FX Bronze for broadcast-quality 3D effects and transitions.

SPECIAL INTRODUCTORY PRICE

(B4417) GST INC **$1,854**



HARRIS TECHNOLOGY™ *WOULD LIKE TO WISH YOU A HAPPY EASTER*

Web Direct

See Web Direct Link (at top of page) for more products and latest info!

Sales: 1300 13 9999 **Fax:** 1300 13 6666 **Website:** www.ht.com.au **E-mail:** sales@ht.com.au **Order on-line** www.ht.com.au

crystal decisions

Web Direct www.ht.com.au/cat/crystal

Powerful Information Delivery for the Web

SPECIAL OFFER FOR CRYSTAL REPORTS 8.5 USERS:

Crystal Enterprise, the most powerful, widely-used, scalable information delivery system available, included in the Crystal Reports 8.5 box.

Crystal Reports 8.5

NEW VERSION





DON'T FORGET your Fly Buys points

What are the top enhancements?

Powerful Content Creation

- Create rich content from XML, OLAP or relational data sources.
- Design interactive reports with drill down, charts, alerting and parameter prompts.
- Publish reports to a variety of formats including XML, PDF, DHTML, RTF and Microsoft Excel.

Flexible Developer Tools

- Integrate interactive content into rich-client (ActiveX, Java) or zero-client (HTML, DHTML) applications.
- Unleash the power of the Crystal Reports Report Engine through the Report Creation API and the Embeddable Crystal Reports 8.5 Designer Control, allowing your users to design reports from within your application.
- Increase developer productivity with rapid application development tools like the Report Designer Component.

Web Publishing System

- Rapidly deploy your reporting solution to the Web with our new web-based report management system.
- Deliver information real-time with report streaming technology or automate delivery with the flexible new scheduling feature.

Crystal Reports seamlessly integrates into Crystal Enterprise for enterprise scalability.

Web Direct

See Web Direct Link (at top of page) for more products and latest info!

Crystal Reports 8.5 Developer

Crystal Reports Dev 8.5
(B8685) GST Inc: **$1,030**

Crystal Reports Dev 8.5- 5 User
(B8686) GST Inc: **$4,017**

Crystal Reports Dev 8.5 Upg
(B8687) GST Inc: **$559**

Crystal Reports 8.5 Professional

Crystal Reports Pro 8.5
(B8684) GST Inc: **$830**

Crystal Reports Pro 8.5- 5 User
(B8683) GST Inc: **$3,885**

Crystal Reports Pro 8.5 Upg
(B8681) GST Inc: **$638**

Other software Full Version/Upgrade products available. Please call for pricing and information

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.
Finance methods are subject to approval.

DtMS™
Desktop Marketing Systems Pty Ltd

Web Direct www.ht.com.au/cat/dtms

Need to find a telephone number?



CD Phone Directory

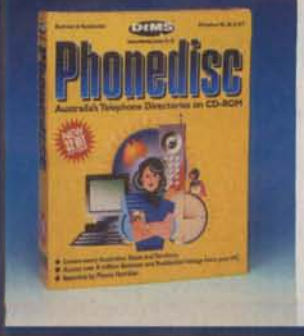
8.5 million listings, business and residential Australia wide

Search by:

- *company name*
- *surname*
- *suburb*
- *line of business*
- *state*
- *postcode*

**Reference only - no printing*

(B1182) GST Inc: **$21**



Phonedisc

Step up from CD Phone Directory.
More powerful searching.

Search by:

- *telephone/fax number*
- *postcode*
- *company name*
- *radius from a postcode*
- *suburb*
- *surname*
- *state*
- *line of business*

**Print one record at a time*

(B1199) GST Inc: **$119**

Fly Buys.
Collect **Fly Buys** points on your computer hardware & software when you purchase from HARRIS TECHNOLOGY.

Executive Software
Focused Development of System Management Tools

Web Direct www.ht.com.au/cat/pixel

Manage your Desktop Efficiently

Diskeeper V6.0



Diskeeper for Windows 2000/MT/95/98/Me Servers and Workstations solves the problem of degraded disk performance due to file fragmentation, by optimising the disk file structures. Fragmentation first strikes during the process of installing Windows and continues to spread degrading system performance whenever files are edited, compressed or uncompressed. The resulting delays in disk head seek times required to retrieve these files can reduce system performance significantly. The disk drive is the slowest component of any system but using Diskeeper, software loading, large graphic and video file handling and database search times can be significantly reduced.

Diskeeper V6.0 Server (B6000) GST Inc: **$560**
Diskeeper V6.0 Workstation (B6001) GST Inc: **$120**

Undelete V2.0



Accidentally deleted files are a fact of computing life. When accidentally deleted files are not in the Recycle Bin, it makes lots of extra work for system administrators. The usual solution is to search through backup tapes until they find the lost file. This often consumes hours. Most businesses run backup at night, so work done after the latest backup is often lost and needs to be recreated. More wasted time and lost productivity. Undelete is a complete solution for Windows NT/2000 Servers and Workstations giving a Network Administrator the ability to instantly restore deleted files. As you will see, Executive Software Undelete provides a complete, real world solution to these every day problems.

Undelete V2.0 Server (B6002) GST Inc: **$560**
Undelete V2.0 Workstation (B6003) GST Inc: **$120**

HARRIS TECHNOLOGY @ Target.
Ballarat (VIC), Camberwell (VIC) & Epping (VIC)
Target Shoppers!
Not all products are in-store, but consulting & advice available on all items

Sales: 1300 13 9999
Fax: 1300 13 6666
Website: www.ht.com.au
E-mail: sales@ht.com.au
Do you want FlyBuys with that?

Adobe®

Check for latest prices & products!
Web Direct www.ht.com.au/cat/adobe

Inspiration becomes reality...

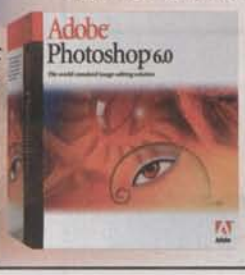


HARRIS TECHNOLOGY™ WOULD LIKE TO WISH YOU A HAPPY EASTER

Photoshop 6.0

The world standard image editing solution

Adobe Photoshop® 6.0 software introduces the next generation of image editing with powerful new features that offer something for every user. Now combine vector drawing tools and new layer design features that greatly enhance your creative options. Produce the highest quality graphics with an expanded Web tool kit that includes more timesaving features as well as ImageReady™ 3.0 software for advanced Web production tasks. Master the power of Photoshop faster with user-interface enhancements that make it easy to take full advantage of the comprehensive tool set.

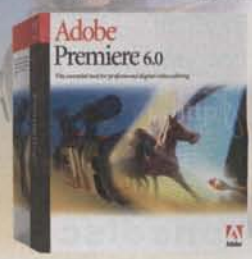


(A8347) GST INC: **$1,368**

Premiere 6.0

The essential tool for digital video editing

An essential set of tools for creating video for the Web, DVD, CD-ROM, and videotape. Get started quickly with built-in, cross-platform DV support. Easily prepare projects for the Web with one-step output to all the leading Web streaming-video formats. Work more productively with new storyboarding capabilities, enhanced Monitor and Timeline windows, a sophisticated new audio mixer, and a new Effects Control palette. Adobe Premiere 6.0 helps you streamline your most demanding video editing and production tasks.

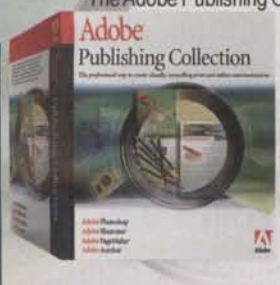


(B4331) GST INC: **$1,279**

Publishing Collection 9.0

The professional way to create visually compelling print and online communications

The Adobe Publishing Collection brings together four of the most powerful software programs available for creating, assembling, and delivering graphically rich designs for print and the Web: Adobe Photoshop® 6.0 (with Adobe ImageReady™ 2.0), Adobe Illustrator® 9.0, Adobe PageMaker® 6.5 Plus, and Adobe Acrobat® 4.0. An affordable suite of programs to help you work efficiently and make your ideas stand out!

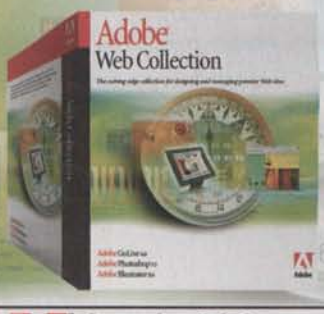


(B1154) GST INC: **$2,245**

Web Collection 3.0

The cutting edge collection for designing and managing premier Web sites

The Adobe Web Collection is a comprehensive software suite that gives you the power to design extraordinary Web graphics, & build dynamic Web sites. It includes three Adobe applications: Adobe GoLive™ 5.0, Adobe Photoshop® 6.0 & Adobe Illustrator® 9.0



(B1152) GST INC: **$2,298**

FLY BUYS 500 BONUS POINTS

Collect 500 Bonus Fly Buys points when you purchase 99749 or 75294 between 20/03/01-30/04/01

GoLive 5.0

Professional Web authoring and site management

Adobe® GoLive™ 5.0 software gives you industrial-strength design, production, and management features so you can create professional dynamic-database-driven Web sites. Tightly integrated with other Adobe products such as Photoshop® Illustrator® and LiveMotion™ Adobe GoLive software protects your code from modification and corruption while offering industry-leading site layout and management functionality.

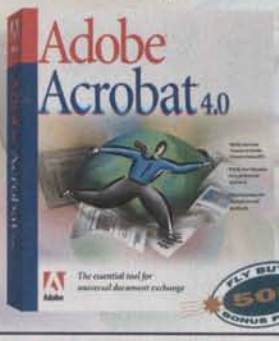


(99749) GST INC: **$645**

Acrobat 4.0

The essential tool for universal document exchange

Tired of colleagues not being able to open your documents? Frustrated by software and platform incompatibilities that destroy your documents' look and feel? Adobe Acrobat® is the most reliable, effecient way to share information electronically. It lets *you concert any* document into an Adobe Portable Document format (PDF) file, with its original appearance preserved, then distribute it for viewing and printing on any system.



(75294) GST INC: **$504**

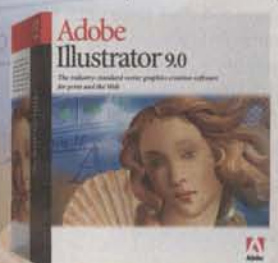


Speedy Delivery Australia Wide

Illustrator 9.0

Sophisticated illustration software

Adobe Illustrator gives you the freedom to express your creativity & the power to be more productive as you create graphically rich drawings & illustrations for printed documents, presentations, & the Web. If you need to create captivating artwork for printed documents, presentations, or the Web, count on Illustrator to let you push the limits of your creativity with top quality results every time. Explore your creativity. Boost your productivity.



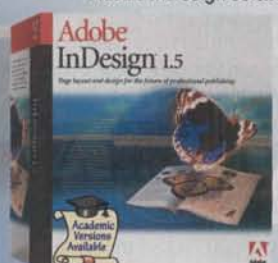
Academic Versions Available

(99750) GST INC: **$914**

InDesign 1.5

Page layout and design for the future of professional publishing

Adobe InDesign software is a new state-of-the-art page layout program that delivers unprecedented creative freedom, productivity, and precision while integrating seamlessly with Adobe's other leading design programs. Adobe InDesign removes the creative barriers presented by previously available publishing software, providing a powerful new set of tools that can shorten the distance between inspiration and reality.



Academic Versions Available

(99471) GST INC: **$1,585**

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval.

Adobe®

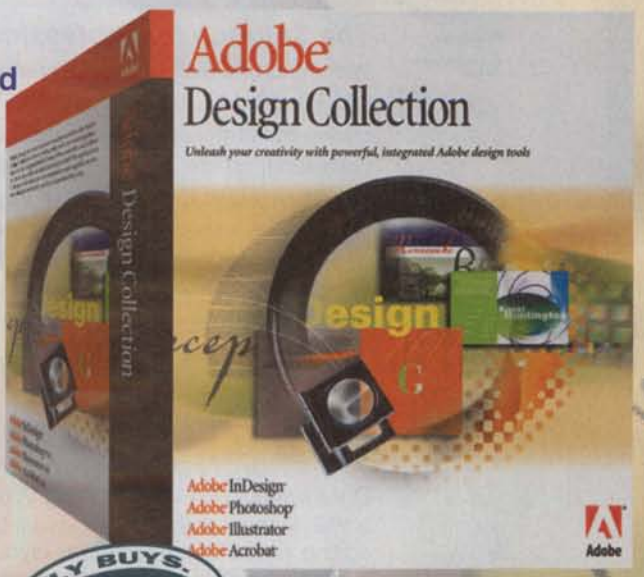
Check for latest prices & products!

Web Direct www.ht.com.au/cat/adobe

Inspiration becomes Reality

Adobe™ Design Collection 3.0

Unleash your creativity with powerful, integrated Adobe design tools



Adobe Design Collection contains the following four leading-edge design & publishing applications in one fully integrated suite: Adobe InDesign™ V1.5, Adobe Photoshop® V6.0, Adobe Illustrator® V9.0, Adobe Acrobat® V4.0 Together, these programs give you everything you need to create & produce professional images, illustrations, & layouts, and to publish documents across media.

(A8502) GST INC: **$2,164**

FLY BUYS. 500 BONUS POINTS

FLY BUYS 500 BONUS POINTS

Collect 500 Bonus Fly Buys points when you purchase A8502 between 20/03/01 - 30/04/01

Open Options Transactional License Program

The Adobe® Open Options Transactional License Program (TLP) makes it easy for organizations with as few as ten workstations to participate in volume purchasing. It offers ease of entry, covers most Adobe products, and is available worldwide. The TLP is open to corporate, government, education, and small business customers.

1 POINT PER LICENSE	2 POINTS PER LICENSE
Adobe Acrobat	Adobe After Effects
Acrobat Business Tools	Adobe Collections
Adobe Type Manager	Adobe Font Folio
Adobe Dimensions	Adobe FrameMaker
Adobe FrameViewer	Adobe GoLive
Adobe Photoshop LE	Adobe Illustrator
Adobe PressReady	Adobe InDesign
Adobe Streamline	Adobe PageMaker
	Adobe Photoshop
	Adobe Premiere

Harris Technology is an Adobe Authorised Reseller who can help you take advantage of the Adobe Open Options Transactional License Program.

- Adobe TLP is the only volume license program available through all Adobe Authorised Resellers.
- Simple to use.
- Easy to qualify for.

The table above shows the point value for each eligible product.

VOLUME LICENSING MADE EASY

- Qualifying for Adobe TLP is simple.
- Accrue at least 20 points, in a single transaction.
- Each product is worth either 1 or 2 points.
- Same discount on all licensed items.
- Keep your software investment current.
- Discount level determined by number of points.

A transaction generates the same number of points whether you acquire a new license for an Adobe product, upgrade an older Adobe product to the latest version, or enroll a previously licensed Adobe product (latest version only) in the Maintenance program. The discount level applied to the transaction is determined by the number of points that accrue in the transaction. You receive the same discount level on all items licensed in the transaction, regardless of the quantity of each individual item you order.

MAINTENANCE OPTIONS: The Maintenance program keeps your software investment current by continuously upgrading covered products for a period of two years and the number of days until the end of the calendar quarter. You can enroll any new or upgraded licenses, current version shrinkwrapped products, or original equipment manufacturer (OEM) licenses in the TLP Maintenance program at any time, provided that the order meets the 20-point minimum requirement. You can also use points accrued through maintenance program enrollment to help you reach a higher discount level, further reducing the cost of new licenses. You will be billed for two years of Maintenance when you place your order under the TLP.



HARRIS TECHNOLOGY™ for all your computer needs!

Wine on-line?

VINTAGE CELLARS

vintagecellars.com.au

APR 55

Sales: 1300 13 9999 **Fax:** 1300 13 6666 **Website:** www.ht.com.au **E-mail:** sales@ht.com.au **Delivery** Australia-Wide

macromedia

Web Direct www.ht.com.au/cat/macromedia

what the web can be.

MACROMEDIA WEB DESIGN STUDIO



(B4410) GST INC: **$1,545**

The Solution for Professional Web Site Design

With Macromedia® Dreamweaver®, Fireworks®, Macromedia Flash™, and FreeHand®, the Macromedia Web Design Studio is the solution of choice for professional Web designers. Design site concepts in FreeHand; create, edit, and optimize images, and add advanced interactivity with Fireworks; use Flash for creating low-bandwidth, high-impact Web experiences; then integrate everything into Dreamweaver where you can design visually or hand-code your Web site.

$150 CASH BACK

$150 Cash back on commercial version and $50 cash back on Educational version of Web Design Studio.

Offer expires 31st May 2001. Offer not available on upgrade versions.

Educational pricing on all Macromedia products is available, students need to supply a current tertiary enrolment form from a TAFE or University

MACROMEDIA DREAMWEAVER 4



(B3026) GST INC: **$660** ★★ NEW VERSION ★★

The #1 professional web development solution!

Dreamweaver® 4 is everything you need to create a professional web site whether you prefer to work with familiar visual layout tools or demand the control of a robust text-editing environment. Familiar layout view and intuitive, Macromedia user interface makes it easy to create and manage your site, while robust text-editing environment gives hand-coding professionals the control they demand. Instantly create high-impact Macromedia® Flash™ graphics directly in Dreamweaver, drop in content from Microsoft Office and easily import Fireworks 4 rollovers, pop-up menus and buttons to create engaging Web experiences.

Upgrade Prices are also available Contact Harris Technology for more details

MACROMEDIA FIREWORKS 4



The best solution for Web graphics!

Create, edit and animate Web graphics in a robust professional environment. Add advanced interactivity, optimize images and integrate seamlessly with Macromedia applications for efficient development.

★★ NEW VERSION ★★

(B3028) GST INC: **$698**

DREAMWEAVER ULTRADEV 4



Build ASP, JSP or CFML web applications faster!

Rapidly build database-driven Web applications for industry standard servers and databases and maintain total control over source code with a professional hand-coding environment. Maximize productivity with built-in server behaviors and Live Data Preview.

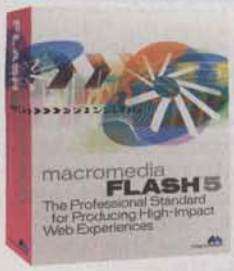
★★ NEW VERSION ★★

(B6785) GST INC: **$1,395**

Fly Buys.

Collect **Fly Buys** points on your computer hardware & software when you purchase from HARRIS TECHNOLOGY.

MACROMEDIA FLASH 5

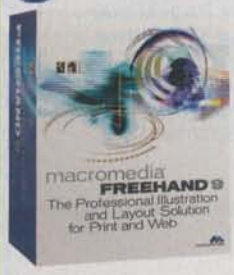


The Professional Standard for Producing High-Impact Web Experiences.

Design and deliver distinctive, low-bandwidth Web Sites with Macromedia® Flash™ 5, the professional standard for producing high-impact, vector-based, Web experiences.

(A5789) GST INC: **$820**

MACROMEDIA FREEHAND 9



The Professional Illustration & Layout Solution for Print & Web.

With advanced new illustration tools, support for publishing to Flash 5, and built-in HTML & optimsed bitmap export features, FreeHand raises the bar for Web & print graphics. Express your ideas with breakthrough creative tools, such as perspective grids for accurate 3D effects, live enveloping, vector transparency & multi-page layout.

(95113) GST INC: **$815**

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval.

MICROGRAFX

Licensing & Academic versions are available

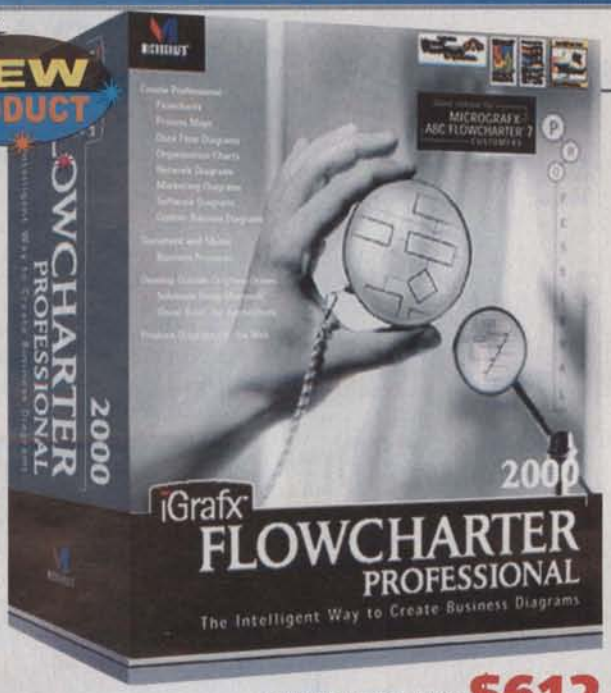
Check for latest prices & products!

Web Direct www.ht.com.au/cat/micrografx

Intelligent graphics at work

iGrafx 2000 FLOWCHARTER PROFESSIONAL

NEW PRODUCT



The power-packed successor to ABC FlowCharter and iGrafx Professional.

New version of the best selling FlowCharter! Now includes iGrafx OrgCharter, and fully optimised for Windows 2000.

iGrafx FlowCharter 2000 Professional's sophisticated diagramming power provides professional-quality diagrams with built-in intelligence that can actually aid in critical problem solving and decision making. Diagram business processes, networks, organisational structures and more.

Features comprehensive Microsoft Office and Visual BASIC for Applications v6 support, professionally designed templates for every business need, HTML output and network-enabled deployment.

(B4376) GST INC: **$612**

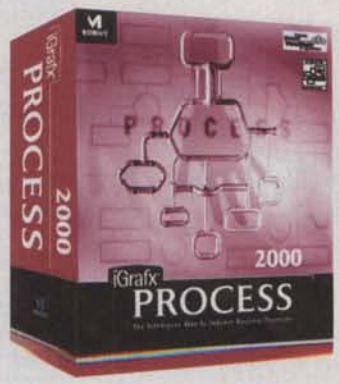


HARRIS TECHNOLOGY. *WOULD LIKE TO WISH YOU A HAPPY EASTER*

iGrafx 2000 PROCESS

(B7561) GST INC: **$1,539**

NEW PRODUCT



New version of the best selling iGrafx Process! Powerful graphical process diagramming, modelling and simulation capabilities.

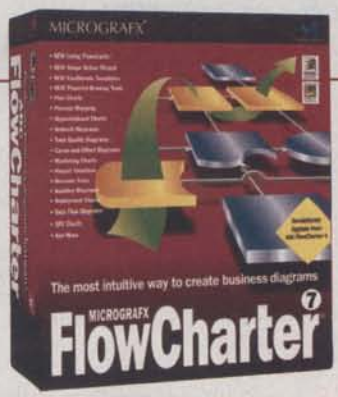
New version now includes full copy of iGrafx FlowCharter 2000 Professional and iGrafx OrgCharter. Also includes Auto-Layout feature, improved simulation algorithms and timetable generator. Process 2000 now allows for data to be imported into the process simulation from 'real world systems' with minimal customisation. Integrated process diagramming, simulation and analysis features make iGrafx Process 2000 the ultimate tool for process improvement. Allows 'What If?' scenarios and resource and cost analysis. Features Microsoft Office compatibility, HTML support, Visual BASIC for Applications v6 extensibility and more.

Fly Buys.

Collect Fly Buys points on your computer hardware & software when you purchase from HARRIS TECHNOLOGY.

MICROGRAFX FlowCharter 7

(80162) GST INC: **$295**



The most intuitive way to create business diagrams

Visually communicate ideas, information and data using this best-selling software

FlowCharter 7.0 creates incredibly powerful, interactive diagrams of just about everything imaginable – business processes, workflows, computer networks, web sites, database structures and much more.

Incredibly useful in all areas of business management including Sales and Marketing, Finance, Human Resources and IT Professionals

Sales: 1300 13 9999
Fax: 1300 13 6666
Website: www.ht.com.au
E-mail: sales@ht.com.au

Visit our HT@Kmart Kiosks! See Page 2

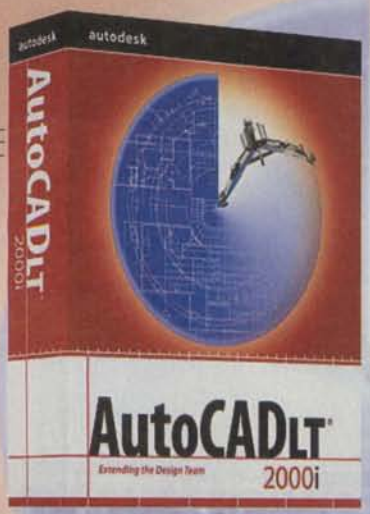
autodesk

Web Direct www.ht.com.au/cat/autodesk

What today's CAD designers want



Speedy Delivery Australia Wide



AutoCAD LT 2000i

Now it's easier than ever to extend your AutoCAD® design team! Introducing AutoCAD LT 2000i. Productivity-packed and easy to learn, use, and remember, it's the only low-cost, professional 2D CAD program to combine 100% AutoCAD® 2000/2000i drawing compatibility with simple-to-use Internet tools. Use it to enhance drawing productivity and gain a critical competitive edge.

Includes a Microsoft mouse. And a copy of Encyclopedia Britannica 99 (valued at $99) when you register the product. (only with purchase of Full Version)



FULL VERSION: (A2432)
GST INC **$1,248**

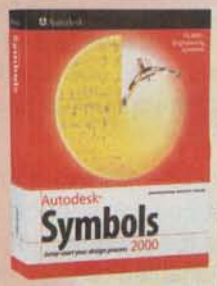
UPGRADE: (A2793)
GST INC **$374**



Symbols 2000 Architectural

This professional collection of the most commonly used symbols can significantly improve your productivity by giving you a ready-made library of design elements. With the toolbar-style interface, find any of the 5,600-plus symbols with only2 mouse clicks, then place where you need.

(A1319) GST INC **$154**



Symbols 2000 Engineering

Find any of the 10,800-plus symbols with only2 mouse clicks, then place where you need. Electrical IEC, Electrical JIC, Mechanical DIN/ISO Library, Hydraulics, Pneumatics, Materials Processing and Ventillation, Electronics, Organizational and Planning Libraries.

(A1320) GST INC **$154**

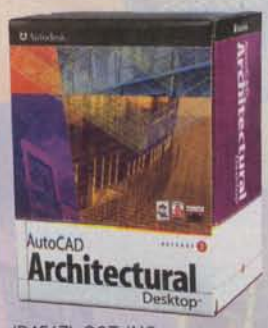
Wine on-line?

VINTAGE CELLARS

vintagecellars.com.au

Web Direct

See Web Direct Link (at top of page) for more products and latest info!



AutoCAD Architectural Desktop

*Student Version

AutoCAD Architectural Desktop™ Release 3 is complete architectural design software for the building life cycle in the AutoCAD® environment. It has the special tools you need to create and produce architectural models in 2D and 3D—plus all the underlying functionality of AutoCAD 2000.

(B4517) GST INC **$269**

*Current student ID + course record needed to purchase



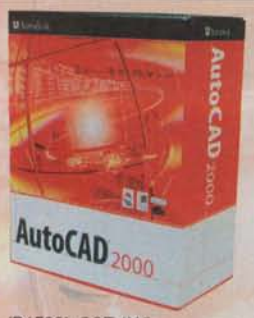
AutoCAD Mechanical Desktop

*Student Version

Mechanical Desktop® Release, a major update of the world's best-selling solid modeler, unites 3D parametric features with the 2D AutoCAD® 2000 toolset and integrates with companion software to address every design-through-manufacturing process. The Power Pack version adds a parts library, a shaft generator, and engineering calculations.

(99703) GST INC **$269**

*Current student ID + course record needed to purchase



AutoCAD 2000i

*Student Version

A feature-rich, streamlined, forward-looking release of the world's leading CAD software product. More than 400 new and enhanced productivity tools. Quickly search, extract and re-use specific design data. Works simultaneously between drawn files. Drag and drop exchange of design information from file to file. Automatically scales drawings to fit your plotter.

(B1533) GST INC **$269**

*Current student ID + course record needed to purchase



3D Studio Max + Character Studio

*Student Version

3D Studio Max 3.1: Professional 3D modelling and animation. Quickly create richly textured, high quality images and animations. Character Studio is an extension for 3D Studio MAX. For large-scale, professional character animation production. Create characters that move with amazing realism.

(86115) GST INC **$269**

*Current student ID + course record needed to purchase. Course must be related to subject- ie: graphic design/ animation & course must be longer than 12 months.

APR 58

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.

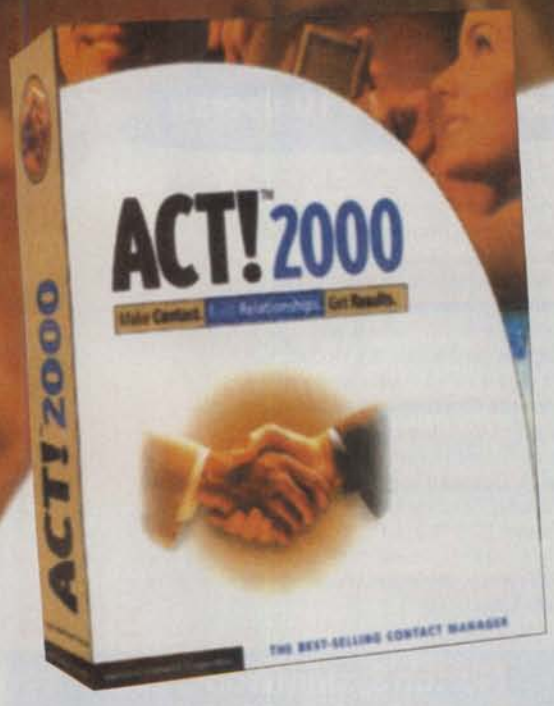
bankcard MasterCard VISA eftpos AMERICAN EXPRESS Diners Club International

Finance methods are subject to approval.

Interact
commerce corporation

Live Update! Web Direct www.ht.com.au/cat/interact

The Best Selling Contact Manager



on the go with... ACT!

ACT! 2000 provides you with an integral solution for every step of the sales development cycle, from the initial contact to the final sale. It gives you instant access to contact information, keeps a complete history of your communications and helps you manage your diary efficiently – all from your laptop, PC or Palm Pilot®

Product highlights:

- Share your ACT!® calendar information with Microsoft Outlook.
- Sell more with the easiest, best-selling contact manager.
- Make your customers feel like they are the only one.
- Keep important details from slipping through the cracks.
- Reach contacts no matter where you are.
- Predefine a series of activities and automatically schedule the steps with your contacts.
- Keep track of expenses and generate your expense report.
- Make **Contact**. Build **Relationships**. Get **Results**.

(A4573) GST INC **$209**

Wine on-line?
Vintage Cellars
vintagecellars.com.au



HARRIS TECHNOLOGY™ for all your computer needs!

VERITAS
BUSINESS WITHOUT INTERRUPTION™

Web Direct www.ht.com.au/cat/veritas

A Better Way to Manage E-mail Data

VERITAS, an industry leader in Windows NT/Exchange data protection introduces VERITAS Remote Storage for Microsoft Exchange. VERITAS Remote Storage for Microsoft Exchange gives you faster backup and recovery of Exchange systems. It drastically reduces the size of Exchange Servers within an environment, by moving older message attachments out of the Information Stores and onto a secondary storage device. Whilst leaving a token in the Exchange database in place of the attachment, so that Exchange clients can still access the data. Exchange can then access remote storage to retrieve any attachment thus reducing backup and recovery time. Finally, VERITAS Remote Storage for Microsoft Exchange even allows administrators to define the size and age of the message attachments to be moved out into remote storage.

SPECIAL OFFER 1*

VERITAS Remote Storage for Exchange *Including 1 Year Maintenance* (B8674) GST Inc. **$3,629** *(Save** Over $6,000)*

VERITAS Remote Storage Agent (B8675) GST Inc. **$1,059** *(Save** Over $700)*

SPECIAL OFFER 2*

VERITAS Remote Storage for Exchange
VERITAS Backup Exec NT/2000 V8.5
VERITAS Remote Agent V8.5
VERITAS Exchange Agent V8.5
Including 1 Year Maintenance
(B8676) GST Inc. **$5,185** *(Save** Over $8,000)*

Introducing VERITAS Remote Storage™ for Microsoft Exchange®



You've got too much mail.

HARRIS TECHNOLOGY™ @ Kmart
Broadway (Sydney) Burwood (Melbourne)
Kmart Shoppers!
Not all products are in-store, but consulting & advice available on all items

*Offer ends 30 June 2001. Terms & Conditions apply. **Saving based on RRP if units were to be purchased separately.

Sales: 1300 13 9999 **Fax:** 1300 13 6666 **Website:** www.ht.com.au **E-mail:** sales@ht.com.au

Visit our HT@Target Kiosks! See Page 2

symantec™

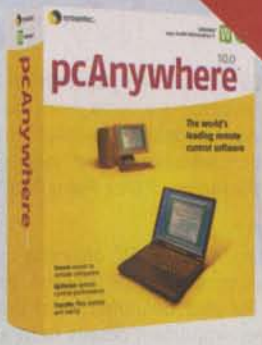
Web Direct www.ht.com.au/cat/symantec

End PC rage with Symantec

pcAnywhere v10.0

NEW VERSION

pcAnywhere™ is the world's leading remote control software. With powerful encryption and authentication, it gives you peace of mind that your remote sessions will be secure. Speed up performance with the new optimization wizard. You can also use pcAnywhere with cable and DSL modems for faster remote control sessions. Now it's even faster and easier to navigate directories on both machines when you're transferring files. Use the AutoTransfer function to upload or download multiple files automatically. Whether you need to support servers, customers, or friends, choose award-winning pcAnywhere, the world's best-selling remote control solution.



(B8553) GST INC
$265

Norton AntiVirus 7.5 Small Business Solutions for 10 users

NEW PRODUCT

For small managed networks consisting of 1 server and up to 9 work stations, **Norton AntiVirus 7.5** Small Business Solution for 10 Users, provides automated, centralised virus protection and management. Customers who purchase and register this product are eligible for 12 months Upgrade Insurance from Symantec. Additional server or workstation licences may be purchased through the **Symantec Value Licence Program.**

Platforms Supported;
Netware 3.13, 3.2, 4.11, 4.2, 5.X; WinNT v4/2000 Server; OS/2 client; DOS, Win3x; Win95/98; WinNT v4/2000 & Macintosh.



(B3129) GST INC
$998

Norton Internet Security



$105
(A8104) GST INC

Norton Ghost 2001



$118
(A8012) GST INC

Norton Utilities 2001



$80
(A8009) GST INC

Symantec WinFax Pro



$105
(96427) GST INC

Back to Business Bundle Pack

This bundle from Symantec is available for a limited time only, combines **Norton SystemWorks 2001** – which consists of best-of-breed, award winning solutions that are designed to work together, so you can easily improve system performance, eliminate viruses, and remove unwanted files, **AND Norton Personal Firewall 2001** - to give you peace of mind that your PC is secure from intrusion by hackers and your privacy is protected.



Bundle Pack
(B4387)GST INC
$150

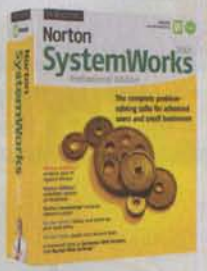
NORTON PERSONAL FIREWALL 2001
SOLD SEPERATELY
(A8102) GST INC
$80

NORTON SYSTEM WORKS 2001
SOLD SEPERATELY
(A7648) GST INC
$130

Norton SystemWorks 2001 Professional Edition

This edition addresses the more sophisticated needs of the power user & small business owner. This suite offers all the tools in the standard edition, plus extra help with managing faxing & fax-on-demand needs, as well as system upgrading & backup tasks.
Includes:

- **Norton AntiVirus 2001**
- **Norton Utilities 2001**
- **Norton CleanSweep 2001**
- **Norton Web Services 2001**
- **Norton Ghost 2001**
- **WinFax 10.0 Basic Edition**



(A7647) GST INC **$170**

Did you know...

Symantec AntiVirus for Palm OS beta version gives customers the opportunity to take an early look at some of the technologies that Symantec has under development for the handheld device platform. This product is available for free download at...

www.sarc.com/avcenter/palmscanner.html



Norton AntiVirus 2001 and Norton AntiVirus (5 user pack)



Norton AntiVirus™
(A5736) GST INC **$80**

Norton AntiVirus™ is the world's leading anti-virus software. It's always working in the background to protect your PC, and now it automatically updates its virus definitions when you're connected to the Internet.
AntiVirus protection that is always up to date — **LiveUpdate 1.6** makes download faster all over the world, Smart scanning engine, Bootable CD for emergencies
Norton AntiVirus 2001 Multi-user pack provides essential virus protection for the small business to licence up to five workstations. It's always working in the background to protect your PC, and now it automatically updates its virus definitions when you're connected to the Internet. Don't let your company fall victim to viruses or other malicious internet code.



Norton AntiVirus™
5 user pack
(B2937) GST INC **$239**

APR
60

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.
Finance methods are subject to approval.

Computer Associates

Web Direct www.ht.com.au/cat/ca

Complete Storage Management

ARCserve 2000

NEW PRODUCT

Complete Data Protection for the Internet Age

Industry's most advanced storage solution delivers comprehensive data protection for Windows NT/2000 environments. ARCserve 2000 delivers centralised management, assured virus-free backup/restore, SAN serverless backup and integrated fail-over with Microsoft Cluster Services. Learn more about how this industry-leading solution can help you address the *e*Business challenges of availability, scalability, and high performance.



ARCserve for Windows NT/2000 - Workgroup Edition
Installs on a single Windows NT server. 250 clients included.
(A2228) GST Inc: **$885**

ARCserve for Windows NT/2000 - Advanced Edition
To backup multiple Windows NT servers with centralised management. Includes 5 FREE NT clients.
(A2229) GST Inc: **$1,839**

ARCserve for Windows NT/2000 - Advanced Edition - Disaster Recovery Option
(A2234) GST Inc: **$885**

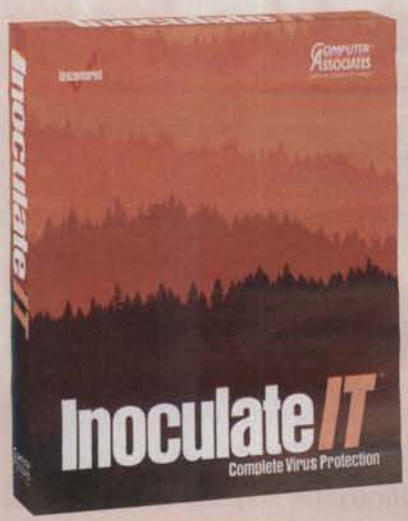
Fly Buys. Shop at HARRIS TECHNOLOGY and collect Fly Buys Points!



ARCserve 7 for Netware Single Server
(B6727)
GST INC
$997

InoculateIT 4.53 Windows NT/2000

InoculateIT is the premier antivirus solution for networked environments offering unmatched management and virus protection.



Workgroup Edition
(76149) GST Inc: **$630**

Advanced Edition
(76269) GST Inc: **$917**

Workgroup/Advanced Edition 1 User:
(76151) GST Inc: **$65**

Workgroup/Advanced Edition10 User:
(76152) GST Inc: **$516**

Workgroup/Advanced Edition 25 User:
(76153) GST Inc: **$829**

Workgroup/Advanced Edition 100 User:
(76154) GST Inc: **$2,540**

Workgroup/Advanced Edition 250 User:
(76155) GST Inc: **$5,410**



HARRIS TECHNOLOGY for all your computer needs!

Sales: 1300 13 9999
Fax: 1300 13 6666
Website: www.ht.com.au
E-mail: sales@ht.com.au

See Page 2 for Locations

Microsoft®

Check for latest prices & products!
Web Direct www.ht.com.au/cat/microsoft

Get ready for the Microsoft .NET Evolution

MSDN Subscriptions provide comprehensive, timely, convenient access to the latest technical information, developer products & tools developers require in their efforts to be successful. MSDN Subscriptions deliver Visual Studio, Microsoft platform technologies and in-depth technical information via CD-ROM, DVD-ROM and on-line.





MSDN UNIVERSAL SUBSCRIPTION

Provides you with the development tools, technologies and information you need to create advanced client/server and Internet Solutions. It is the most efficient, comprehensive & cost-effective way to develop and test solutions using Microsoft technologies.

Your subscription to MSDN Universal includes:

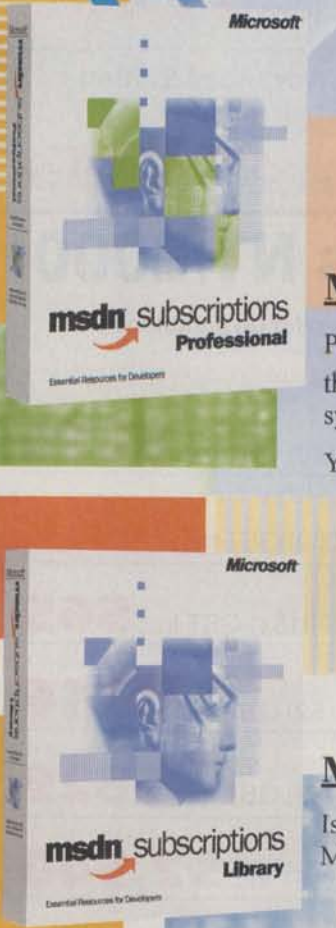
Visual Studio Enterprise Edition
- *The ultimate development suite for building and managing mission-critical enterprise solutions.*
- *Be among the first to receive Visual Studio.NET*

Microsoft .NET Enterprise Servers
- *Receive test-and-develop versions of SQL Server 2000. Exchange 2000 Server & BizTalk Server 2000.*

Microsoft Operating Systems
- *Receive test-and-develop versions of the latest Microsoft Operating Systems including Windows 2000 and Windows Millennium Edition.*

Visio 2000 Enterprise Edition & much more
- *Microsoft's premier diagramming application for technical schematics, network, software and database design.*

Universal Subscription: (66777) GST INC $3,785



MSDN PROFESSIONAL SUBSCRIPTION

Provides you with the development tools, platform technologies and technical information that developers need to test and develop custom solutions with the Microsoft operating systems.

Your subscription to MSDN Professional includes:

Microsoft Operating Systems
- *Receive test-and-develop versions of the latest Microsoft Operating Systems including Windows 2000 and Windows Millennium Edition.*
- *Be among the first to get all Whistler betas and the final release code for Whistler - Microsoft's next generation consumer operating system built on Windows 2000 technology.*

Professional Subscription: (66776) GST INC $1,149

MSDN LIBRARY

Is the essential reference guide for all developers who need the latest information on all Microsoft tools and technologies through quarterly updates.

Library: (66775) GST INC $314

HARRIS TECHNOLOGY™

Pricing and specifications herein are subject to change without notice.
Finance methods are subject to approval.

Microsoft®

Web Direct www.ht.com.au/cat/microsoft

Save time, save money...

Microsoft® Open License program is easy to understand, easy to track licenses, easy to administer and offers savings on a combination of Microsoft products.



Using licensed Microsoft products is one of the most important elements to your success as a value added Microsoft customer. The main benefit would be the security and support of using fully legal software, and what's more important, you save yourself, or your business organisation money, because volume-based licenced software costs less than the same product sold at retail. A number of different pricing options are available to meet a variety of needs. The Open License Program (MOLP) is a simple licensing program saving you time and resources: You order multiple licenses at once, and the license certificate you receive does not come with extra boxes, discs or documentation sets that take up valuable space.

Titles include



Visio2000
Windows2000 *Professional*
Office2000 *(standard, small business, premium and developer)*
Word2000
Powerpoint2000
Excel2000
Publisher2000
FrontPage
...and more!
Call Harris Technology for more titles in the microsoft range.





HARRIS TECHNOLOGY. for all your computer needs!

Wine on-line?
VINTAGE CELLARS
vintagecellars.com.au

Fly Buys.
Collect Fly Buys points on your computer hardware & software when you purchase from HARRIS TECHNOLOGY.

APR 63

Sales: 1300 13 9999
Fax: 1300 13 6666
Website: www.ht.com.au
E-mail: sales@ht.com.au
Order on-line www.ht.com.au

Microsoft®

Check for latest prices & products!
Web Direct www.ht.com.au/cat/microsoft

The Office 2000 Family

Microsoft Office Value Pack

(B1737) GST INC: **$580**

FLY BUYS 1,000 BONUS POINTS

Collect 1000 Bonus Fly Buys points when you purchase B1737 between 20/03/01-30/04/01

CONTAINS OVER $1,700* WORTH OF PRODUCTS!

- Office 2000 Standard Upgrade Edition
- Publisher 2000 Full Version
- Age of Empires I
- Encarta 2000 Standard Edition
- Intellimouse Explorer
- Communique 6 month subscription
- Symantec Norton Antivirus 2001
- GoldMine 5.0
- Intel Easy PC Web Camera

* Based on RRP of individual items.



Microsoft Office2000

Tech Guarantee out now.
Buy Microsoft Office 2000 and receive a FREE upgrade to Office XP when available.
Terms and Conditions apply.
Visit www.ht.com.au for more details.





(81306) GST Inc: **$360**



(97507) GST Inc: **$720**



(97512) GST Inc: **$1,799**

APPLICATIONS	Standard	Small Business	Professional SR-1	Premium SR-1 (incl. PhotoDraw 2000.2)	Developer
Word 2000	✓	✓	✓	✓	✓
Excel 2000	✓	✓	✓	✓	✓
Outlook 2000	✓	✓	✓	✓	✓
Powerpoint 2000	✓		✓	✓	✓
Publisher 2000		✓	✓	✓	✓
Small Business Tools		✓	✓	✓	✓
Access 2000			✓	✓	✓
FrontPage 2000				✓	✓
PhotoDraw 2000				✓	✓
Dev. Tools & Database Runtimes					✓
Part number **FULL VERSION**	(75956) GST INC: **$890**	(75960) GST INC: **$895**	(75958) GST INC: **$1,074**	(99648) GST INC: **$1,435**	(B8395) GST INC: **$1,810**
Part number **UPGRADE**	(76477) GST INC: **$480**	(76481) GST INC: **$485**	(76479) GST INC: **$620**	(99649) GST INC: **$735**	(B5497) GST INC: **$1,165**

- **Word 2000** - Word processing package including many design features that gear it for the Web
- **Excel 2000** - Spreadsheeting package integrating Web enabled data collaboration and information sharing
- **Outlook 2000** - E-Mail communications package with calendar and contact management facilities
- **PowerPoint 2000** - Presentation package with remote presentation capabilities to lift meeting presentations to new heights
- **Publisher 2000** - Desktop Publishing and design package for easy and inexpensive production of quality publications
- **Small Business Tools** - Includes Small Business Custom & Financial Managers, Business Planner and Direct Mail Manager
- **Access 2000** - Database package used to create simple, useful databases, with improved interface to other Office 2000 applications
- **FrontPage 2000** - Designed for creation and editing of Internet and Intranet Sites
- **PhotoDraw 2000** - Photo Editing and Illustration package, all in one slick, smooth, and easy to use integrated package

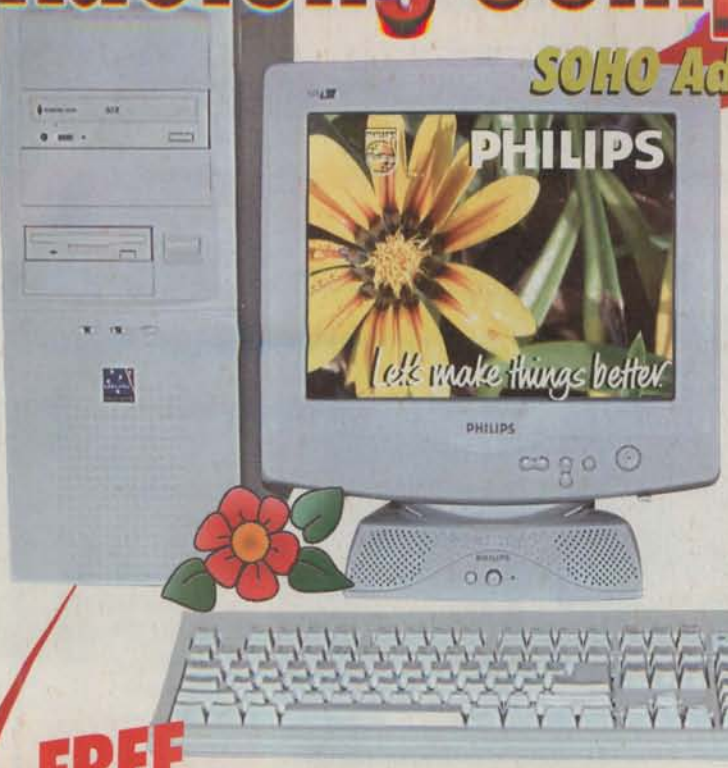
HARRIS TECHNOLOGY™

April 2001

Adelong Computers

ADELONG australia

SOHO Advantage Systems



64MB 133MHz SDRAM
20GB ATA-100 Hard Drive
Integrated AGP Display Card
Integrated 16bit Sound Card
Integrated 10/100 Ethernet
Philips 105E 15' Monitor
52x CD-Rom
1.44MB Floppy Drive
Windows MIllenium Edition
Mouse and Keyboard
ATX Minitower Case
Philips 36W PMPO Multimedia Pedestal

Intel Celeron CPU 667MHz
With 1 Year RTB Warranty
$1,27
SYADE151
Flexirent $43.38

Intel Celeron CPU 667MHz
With 1 Year Onsite Warranty
$1,345
SYADE152
Flexirent $43.38

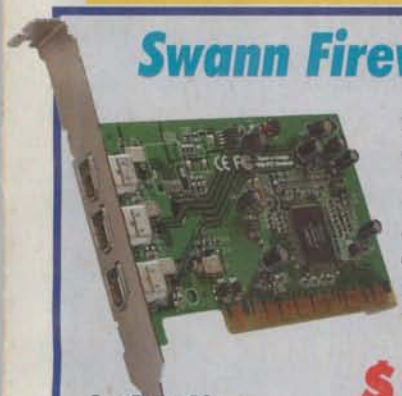
Intel Celeron 766Mhz
With 1 Year Onsite Warranty
$1,445
SYADE153
Flexirent $43.38

FREE
Delivery For Orders Placed On our Website.*
www.adelong.com.au
*Subject to terms and conditions. Please see our website for further details.

Give a *Gift Certificate* this Easter



Swann Firewire



Simply plug this PCI card into your windows 98 computer for instant firewire capability. This card gives you 3 Firewire ports at a full 400Mbps.

See Page 18

$169 CCSWA000

Midex 8 USB MIDI Interface



Midex 8 is the latest innovation in MIDI interface technology from Steinberg

See Page 8

$1,179 MMSTE000

Advantage Pro Audio Edition



The Power Advantage Audio Edition allows you to arrange, compose and edit audio tracks.

Prices start from
$5,215
SYADE189

See Page 8

Adelong Upgrade Solutions



Upgrade your PC easily and quickly with an Adelong Upgrade Solution. Each package is completely assembled with Windows pre-installed for hassle free upgrading.

$50 Trade in for your old PC on all Upgrade Solutions!

Prices start from
$1,339
SYADE179

See Page 11

www.adelong.com, sales hotline 02 8344 3190

Index

Entertainment System	2
Adelong Systems	3
Adelong Systems	4
Entertainment System	5
Adelong Systems	6
Adelong Servers / Systems	7
Adelong System / Sound	8
Notebooks / SCSI Cards	9
Upgrade Bundles	10
Upgrade Solutions	11
UPS	12
Hard Drives / Memory	13
Processors	14
Motherboards	15
Graphic Cards	16
Input Devices	17
Video Editing	18
Sound Cards	19
Speakers	20
Monitors	21
Monitors / CD-Roms / Scanners	22
Monitors	23
Storage / CD-R/RW / Storage	24
Storage	25
Switches /Hubs / Modems	26
Networking	27
Printers / Scanners	28
Printers / Scanners	29
Software	30
Data & USB Devices /CPU Switches	31
Terms & Conditions / Order Form	32

Adelong Systems

Entertainment Systems

FASTEST KID ON THE BLOCK

We've gone and built the fastest Athlon system we can!

3 Year Onsite Warranty*

This 1.2Ghz Record Breaker will leave any serious gamer breathless. Your software will run faster than ever before with the latest AMD Athlon processor, with 266Mhz bus, and DDR ram.



- AMD Athlon 1.2Ghz 266Mhz
- 128MB PC2100 DDR Ram
- 30G 7200rpm ATA100 Hard Drive
- Philips 109S 19' Monitor
- Guillemot 3D Prophet II GTS Ultra 64MB
- Creative SoundBlaster Live Value
- DVD-ROM Drive 16x IDE
- 32x10x4x CD-RW Drive
- 1.44MB Floppy Drive
- Windows Millenium Edition
- Microsoft Intellimouse Explorer
- Microsoft Natural Keyboard Pro
- Adelong 6000P ATX Tower Case
- Microlab M800B 4.1 Speakers
- 56K Internal Modem
- 3 Year Onsite Warranty

$4,695
SYADE112

Flexirent $43.38*

Adelong Custom Solutions

Adelong Computers offer a wide range of PC's, Upgrade Bundles and Upgrade Solutions to suit a broad range of requirements. Not everyone, however, is satisfied with a standard package, which is why all of our solutions can be fully customised. From a simple Ram upgrade to a completely re-configured PC, Adelong Computers can offer you a quality custom solution at a competetive price.

For a custom solution that meets your requirements, call our sales staff on **(02) 8344 3190**, or email your specifications to **sales@adelong.com.au** for your custom solution quotation.

Flexirent - the modern way to pay for technology



Whether you need a computer for the kids or for work, Flexirent is the way to pay. With no deposit and easy monthly payments, you spread the cost over time. And with the flexibility to trade-up to new equipment, you can continue to move into the latest technology without sacrificing your capital or hard earned savings. What better way to stay ahead? Flexirent instead! For more details phone 1800 240 102. (*When equipment is used for business purposes).

No Deposit. | Easy Upgrades. | Tax Deductible*. | More Options.

Flexirent
The modern way to pay for technology

Adelong Computers

Sales Hotline 02 8344 3190
RESELLER ENQUIRIES WELCOME
*Please read our Terms and Conditions

HEAD OFFICE & SERVICE
54 Rosebery Avenue
Rosebery NSW 2018
Ph: (02) 8344 3188
Fax: (02) 9697 9777

SYDNEY CITY STORE
127 York Street
Sydney NSW 2000
Ph: (02) 9267 5272
Fax: (02) 9267 5042

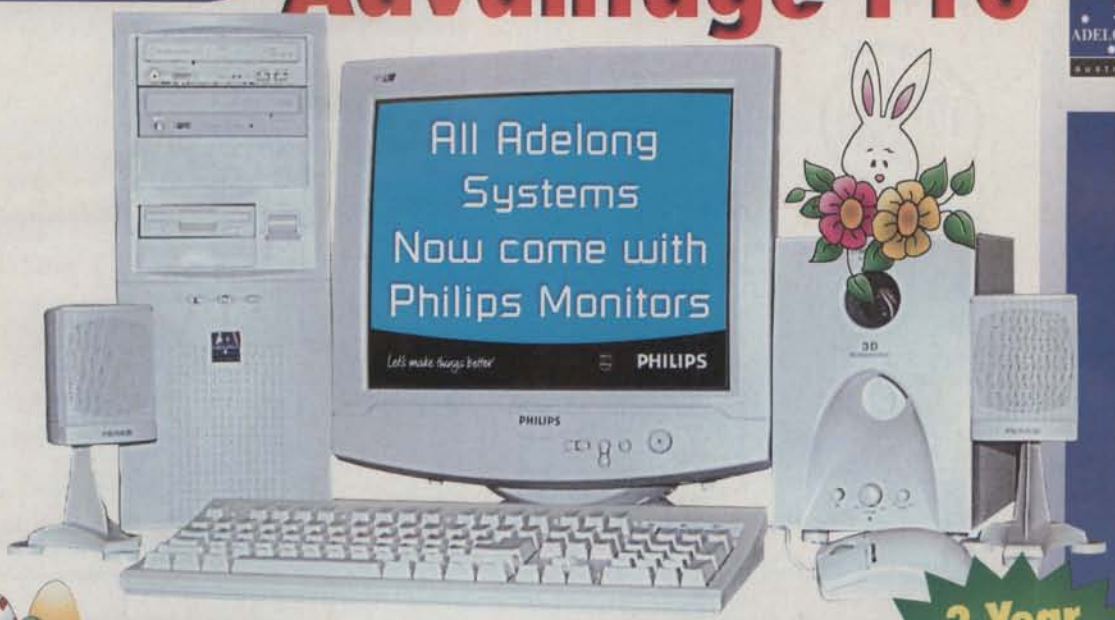
INTERNET WEB SITE:
http://www.adelong.com.au
email: info@adelong.com.au

Adelong Systems

Advantage Pro

Utilising the latest AMD processors, Advantage Pro systems offer the latest PC technology available. Designed for the professional PC user, with power to burn, gamers and performance junkies will not be disappointed.

Systems may vary to that shown in picture.



3 Year Onsite Warranty**

AMD® Duron™ Processor 750Mhz

128MB 133MHz SDRAM
20GB ATA-100 Hard Drive
Philips 107E 17' Monitor
8MB AGP Display Card
Creative SoundBlaster Live Value
52x CD-Rom Drive
1.44MB Floppy Drive
Windows Millenium Edition
Microsoft Intellimouse
104Key Keyboard
ATX Minitower Case
120W Amplified Speakers
56K Internal Modem

$1,699*

Flexirent $20.77#

SYADE155

AMD® Duron™ Processor 800Mhz

256MB PC133 SDRAM
20GB ATA-100 Hard Drive
Philips 107E 17' Monitor
TNT2 M64 32Mb Display Card
Creative SoundBlaster Live Value
16x DVD-Rom Drive
1.44MB Floppy Drive
Windows Millenium Edition
Microsoft Intellimouse
104Key Keyboard
ATX Minitower Case
Microlab M800C Speaker and Subwoofer
56K Internal Modem

$2,049*

Flexirent $24.92#

SYADE156

AMD® Duron™ Processor 850Mhz

256MB PC133 SDRAM
30GB ATA-100 Hard Drive
Philips 107E 17' Monitor
GeForce II MX Display Card
Creative SoundBlaster Live Value
16x DVD-Rom Drive
32x10x4x CD-RW Drive
1.44MB Floppy Drive
Windows Millenium Edition
Microsoft Intellimouse
104Key Keyboard
ATX Minitower Case
Microlab M800C Speaker and Subwoofer
56K Internal Modem

$2,499*

Flexirent $30.46#

SYADE157

AMD® Athlon™ Processor 950Mhz

128MB 133MHz SDRAM
20GB ATA-100 Hard Drive
Philips 107E 17' Monitor
8MB AGP Display Card
Creative SoundBlaster Live Value
52x CD-Rom Drive
1.44MB Floppy Drive
Windows Millenium Edition
Microsoft Intellimouse
104Key Keyboard
ATX Minitower Case
120W Amplified Speakers
56K Internal Modem

$1,915*

Flexirent $23.31#

SYADE158

AMD® Athlon™ Processor 1 Ghz

256MB PC133 SDRAM
20GB ATA-100 Hard Drive
Philips 107E 17' Monitor
TNT2 M64 32Mb Display Card
Creative SoundBlaster Live Value
16x DVD-Rom Drive
1.44MB Floppy Drive
Windows Millenium Edition
Microsoft Intellimouse
104Key Keyboard
ATX Minitower Case
Microlab M800C Speaker and Subwoofer
56K Internal Modem

$2,279*

Flexirent $27.69#

SYADE159

AMD® Athlon™ Processor 1.1GHz

256MB PC133 SDRAM
30GB ATA-100 Hard Drive
Philips 107E 17' Monitor
GeForce II MX Display Card
Creative SoundBlaster Live Value
16x DVD-Rom Drive
32x10x4x CD-RW Drive
1.44MB Floppy Drive
Windows Millenium Edition
Microsoft Intellimouse
104Key Keyboard
ATX Minitower Case
Microlab M800C Speaker and Subwoofer
56K Internal Modem

$2,765*

Flexirent $32.77#

SYADE160

#Flexirent payments quoted are based on a 36 month commercial rental agreement or consumer lease, payable monthly. Rental payments include GST. Conditions apply. Subject to credit approval.

^AVERAGE DELIVERY FOR SYSTEMS WITHIN 3 TO 5 WORKING DAYS. DELIVERY TIMES VARY WITH PARTS AVAILABILITY.

*Prices and specifications subject to change without notice **Conditions Apply

Adelong Computers

Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday
Sales Hotline 02 8344 3190

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190

Adelong Systems

Power Advantage





3 Year Onsite Warranty**

Powered by Intel processors, the Power Advantage is ideal for home or business users, as well as multimedia enthusiasts, who demand computing power with rock solid reliability.

Systems may vary to that shown in picture.

Intel® Pentium® III Processor 866Mhz

128MB 133MHz SDRAM
20GB ATA-100 Hard Drive
Philips 107E 17' Monitor
8MB AGP Display Card
Turtle Beach Montego II
52x CD-Rom Drive
1.44MB Floppy Drive
Windows® Millenium Edition
Microsoft® Intellimouse
104Key Keyboard
ATX Minitower Case
120W Amplified Speakers
56K Internal Modem

$1,969* Flexirent $24.00#

SYADE164

Intel® Pentium® III Processor 933Mhz

256MB PC133 SDRAM
20GB ATA-100 Hard Drive
Philips 107E 17' Monitor
TNT2 M64 32Mb Display Card
Turtle Beach Montego II
16x DVD-Rom Drive
1.44MB Floppy Drive
Windows® Millenium Edition
Microsoft® Intellimouse
104Key Keyboard
ATX Minitower Case
Microlab M800C Speaker and Subwoofer
56K Internal Modem

$2,395* Flexirent $29.08#

SYADE165

Intel® Pentium® III Processor 1Ghz

256MB PC133 SDRAM
30GB ATA-100 Hard Drive
Philips 107E 17' Monitor
GeForce II MX Display Card
Turtle Beach Montego II
16x DVD-Rom Drive
32x10x4x CD-RW Drive
1.44MB Floppy Drive
Windows® Millenium Edition
Microsoft® Intellimouse
104Key Keyboard
ATX Minitower Case
Microlab M800C Speaker and Subwoofer
56K Internal Modem

$2,825* Flexirent $33.46#

SYADE166

Intel® Celeron™ Processor 700Mhz

128MB 133MHz SDRAM
20GB ATA-100 Hard Drive
Philips 107E 17' Monitor
8MB AGP Display Card
Turtle Beach Montego II
52x CD-Rom Drive
1.44MB Floppy Drive
Windows® Millenium Edition
Microsoft® Intellimouse
104Key Keyboard
ATX Minitower Case
120W Amplified Speakers
56K Internal Modem

$1,695* Flexirent $20.54#

SYADE161

Intel® Celeron™ Processor 766Mhz

256MB PC133 SDRAM
30GB ATA-100 Hard Drive
Philips 107E 17' Monitor
GeForce II MX Display Card
Turtle Beach Montego II
16x DVD-Rom Drive
32x10x4x CD-RW Drive
1.44MB Floppy Drive
Windows® Millenium Edition
Microsoft® Intellimouse
104Key Keyboard
ATX Minitower Case
Microlab M800C Speaker and Subwoofer
56K Internal Modem

$2,415* Flexirent $29.31#

SYADE163

- 7-Day customer satisfaction guarantee^
- Technical support hotline
- Fully Customizable
- On Site Warranty Available
- Secure Store www.adelong.com.au

#Flexirent payments quoted are based on a 36 month commercial rental agreement or consumer lease, payable monthly. Rental payments include GST. Conditions apply. Subject to credit approval.

^AVERAGE DELIVERY FOR SYSTEMS WITHIN 3 TO 5 WORKING DAYS. DELIVERY TIMES VARY WITH PARTS AVAILABILITY.

*Prices and specifications subject to change without notice **Conditions Apply

Adelong Computers

Sales Hotline 02 8344 3190
RESELLER ENQUIRIES WELCOME
*Please read our Terms and Conditions

HEAD OFFICE & SERVICE
54 Rosebery Avenue
Rosebery NSW 2018
Ph: (02) 8344 3188
Fax: (02) 9697 9777

SYDNEY CITY STORE
127 York Street
Sydney NSW 2000
Ph: (02) 9267 5272
Fax: (02) 9267 5042

INTERNET WEB SITE:
http://www.adelong.com.au
email: info@adelong.com.au

Adelong Systems

Entertainment Systems

The Power Advantage II

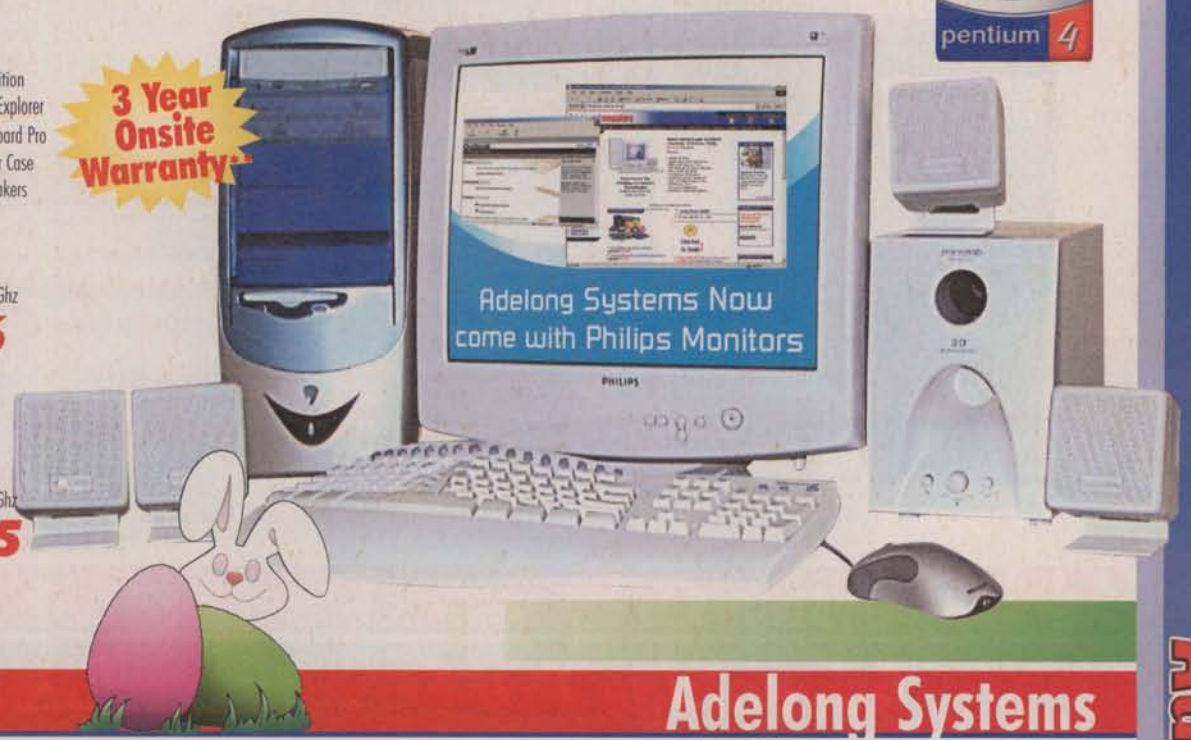
The Power Advantage II features enough blisteringly fast power and bandwith to satisfy any user today, as well as in the future.

128mb 800MHZ ECC RAMBUS RIMM
30G ATA100 7200rpm hard Drive
Philips 109S 19' Monitor
Guillemot 3D Prophet II GTS Ultra 64MB
Creative SoundBlaster Live Value
16x DVD-Rom Drive
32x10x4x CD-RW Drive
1.44MB Floppy Drive
Windows® Millenium Edition
Microsoft® Intellimouse Explorer
Microsoft® Natural Keyboard Pro
Adelong 6000P ATX Tower Case
Microlab M800B 4.1 Speakers
56K Internal Modem
3 Year Onsite Warranty

Intel® Pentium® 4 1.4Ghz
$5446
SYADE167
Flexirent $50.31#

Intel® Pentium® 4 1.5Ghz
$6,045
SYADE168
Flexirent $53.08#

3 Year Onsite Warranty**



Adelong Systems

DV PC

Now everyone can create professional video presentations with the Adelong DV PC. Simply connect your DV Camcorder to the Firewire port and you will be editing in minutes***.

Intel® Pentium® III 866
256MB PC133 SDRAM
30G ATA100 7200rpm Hard Drive
Philips 109S 19' Monitor
TNT2 M64 32Mb Display Card
Turtle Beach Montego II Sound Card
32x10x4x CD-RW Drive
1.44MB Floppy Drive
Windows® Millenium Edition
Adaptec Easy CD Creator Deluxue Edition
MGI Videowave II SE
Microsoft® Intellimouse
104 Key Keyboard
Adelong 6016 ATX Tower Case
Microlab M800B 4.1 Speakers
56K Internal Modem

$3,125
SYADE169
Flexirent $30.65#

***DV Camcorder must be Firewire equipped



3 Year Onsite Warranty*

Adelong Computers

Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday
Sales Hotline 02 8344 3190

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190

Adelong Systems

Power Advantage

The Power Advantage Video Edition is the complete solution for the professional video editor. Featuring the Matrox RT2000 editing card, with its extensive features, and Adobe Premier 5.1, real time editing becomes a breeze.



- Intel® Pentium® III 866
- SDRAM 128MB 133MHz
- 20GB ATA-100 System Hard Drive
- Dual 20Gb ATA100 Hard Drives in Raid Configuration
- Philips B201B 21' Monitor
- Matrox G400 Flex Graphics Card
- Matrox RT2000 Video Editing Card
- Creative SoundBlaster Live Value
- 32x10x4x CD-RW Drive
- 1.44MB Floppy Drive
- Windows® Millenium Edition
- Microsoft® Intellimouse Explorer
- Microsoft® Natural Keyboard Pro
- Adelong 6013 ATX Tower Case
- Microlab M800B 4.1 Speakers
- 56K Internal Modem
- 3 Years Onsite Warranty

$6,845

SYADE170

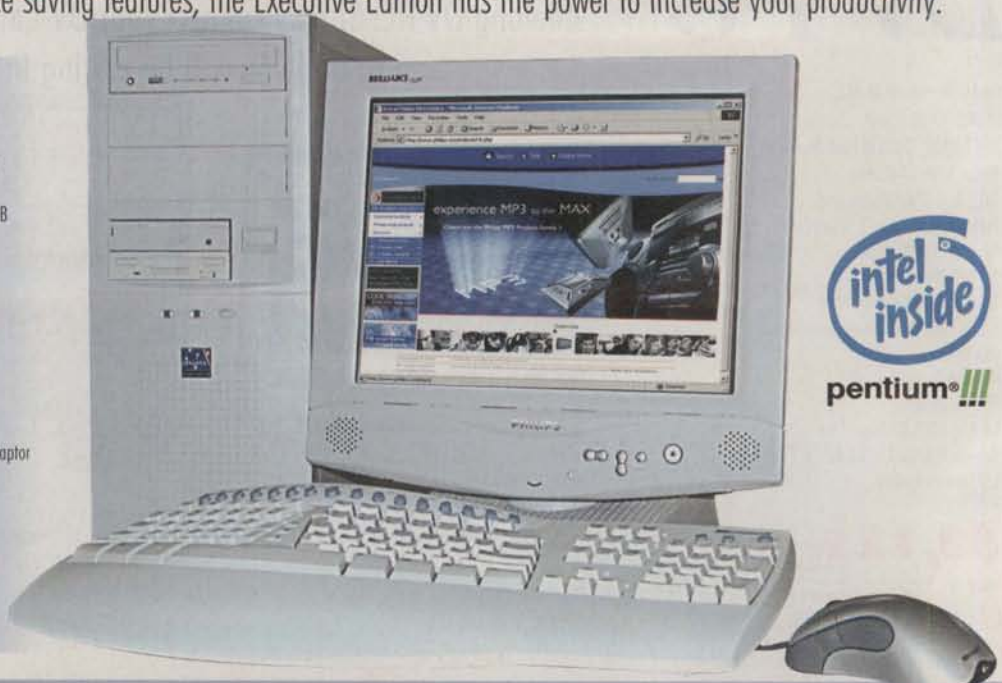
Flexirent $60.23*

Adelong Systems

Advantage Pro Executive Edition

The Power Advantage Executive Edition is the ultimate workstation for the sucessful professional. Ergonomically designed, and with space saving features, the Executive Edition has the power to increase your productivity.

- Intel® Pentium® III 1Ghz
- 256MB PC133 SDRAM
- 40GB 7,200RPM ATA100 Hard Drive
- Philips 150P Brilliance LCD Monitor
- Guillemot 3D Prophet II GTS Pro 64MB
- Creative SoundBlaster Live Value
- 16x DVD-Rom Drive
- 1.44MB Floppy Drive
- Internal Iomega Zip 250MB
- Windows® 2000 Professional
- Microsoft® Intellimouse Explorer
- Microsoft® Natural Keyboard Pro
- ATX Minitower Case
- Intel® Pro 10/100 Management Adaptor
- 3 Years Onsite Warranty
- MS Office 2000 Professoinal



$5,595

SYADE171

Flexirent $51.69*

intel inside pentium® III

Adelong Computers

Sales Hotline 02 8344 3190
RESELLER ENQUIRIES WELCOME
*Please read our Terms and Conditions

HEAD OFFICE & SERVICE
54 Rosebery Avenue
Rosebery NSW 2018
Ph: (02) 8344 3188
Fax: (02) 9697 9777

SYDNEY CITY STORE
127 York Street
Sydney NSW 2000
Ph: (02) 9267 5272
Fax: (02) 9267 5042

INTERNET WEB SITE:
http://www.adelong.com.au
email: info@adelong.com.au

Adelong Servers

3 YEAR on site WARRANTY (Conditions Apply)

Intel® Pentium® III 850 Processor
MSI 694D Pro Air Mainboard
256MB PC133 SDRAM
Dual 20G 7200Rpm ATA100 Hard Drives
Intergrated ATA100 Raid Controller
8MB AGP Display Card
52x CD-Rom
1.44MB Floppy Drive
Windows® 2000 Server with 5 User Lisence
Full Tower ATX Case
Intel® 10/100 Management Adaptor

3 YEAR on site WARRANTY (Conditions Apply)

$3,625
SYADE172
Flexirent $34.38



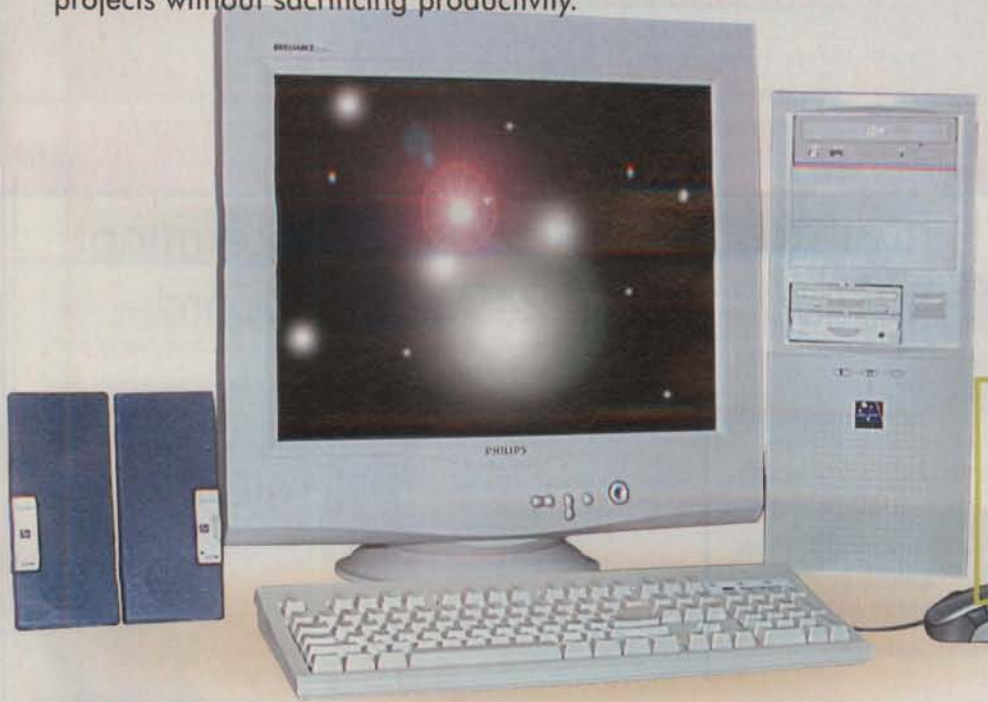
Dual Intel® Pentium® III 850 Processors
Super Micro B370D Motherboard
512MB PC133 SDRAM
Dual 18GB Ultra160 10000RPM Hard Drives
Adaptec 2100S Raid Controller
8MB AGP Display Card
52x CD-Rom
1.44MB Floppy Drive
Windows® 2000 Server with 5 User Lisence
19' Rack Mount Computer Case
Intel® 10/100 Management Adaptor



$7,125
SYADE173
Flexirent $62.54

Power Advantage Graphic Edition

The Power Advantage Graphic Edition is a powerful addition to your design or publishing studio. Equipped with the Matrox G450 display card, the Graphic Edition will power through ultra high resolution projects without sacrificing productivity.



- Intel® Pentium® III 866
- 256MB PC133 SDRAM
- Dual 20Gb ATA 100 7200Rpm Hard Drives in Raid Configuration
- Philips B201B 21' Monitor
- Matrox G450 32MB Graphics Card
- Maxi Sound Muse Soundcard
- 52x CD-Rom
- Internal Iomega Zip 250MB
- Microsoft® Windows 2000 Professional
- Microsoft® Intellimouse Explorer
- 104 Key Keyboard
- ATX Minitower Case
- Microlab WEP-1180 USB Powered Flat Panel Speakers
- Intel® 10/100 Management Adaptor
- 3 Year Onsite Warranty

$4,425
SYADE175
Flexirent $42.00

Webmaster Package
Power Advantage Graphic Edition
Adobe Photoshop 6
Macromedia Dreamweaver 4
Macromedia Freehand 9.0.1
$7,299
Flexirent $64.15

Desktop Publisher Package
Power Advantage Graphic Edition
Adobe Photoshop 6
Adobe Illustrator 9
Adobe Acrobat 4
Adobe Pagemaker 6.5
Quark Express 4.11
$9,899
SYADE175
Flexirent $82.38

Adelong Computers

Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday
Sales Hotline 02 8344 3190

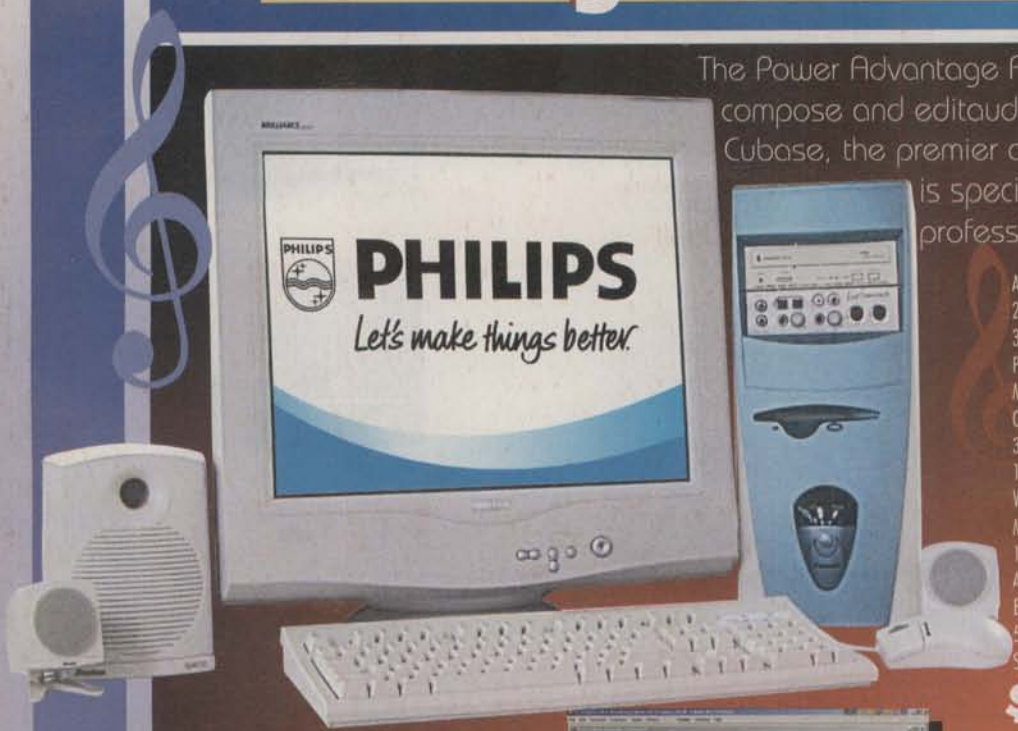
Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190

Adelong Systems

ADELONG australia

Advantage Pro Audio Edition



The Power Advantage Audio Edition allows you to arrange, compose and editaudio tracks. Bundled with Steinberg Cubase, the premier audio editing tool,the Audio Edition is specifically designed to create professional results.

- AMD ATHLON CPU 1Ghz
- 256MB PC133 SDRAM
- 30GB ATA100 7200RPM Hard Drive
- Philips B201B 21' Monitor
- Matrox G450 dualhead 32MB
- Creative SoundBlaster Live Platinum 5.1
- 32x12x8x CD-RW Drive
- 1.44MB Floppy Drive
- Windows Millenium Edition
- Microsoft Intellimouse
- 104 Key Keyboard
- Adelong 6013 ATX Tower Case
- Boston Accoustics BA635 Speakers
- 56K Internal Modem
- Steinberg Cubase 5 VST

$5,215 SYADE189

Flexirent $48.32*

- 512MB PC133 SDRAM
- 30GB ATA100 7200RPM Hard Drive
- 18GB Ultra160 10000RPM Hard Drive
- Adaptec 29160 SCSI Card
- Philips B201B 21' Monitor
- Matrox G450 dualhead 32MB
- EGO-SYS Waveterminal2496 Soundcard
- 32x12x8x CD-RW Drive
- 1.44MB Floppy Drive
- Windows Millenium Edition
- Microsoft Intellimouse
- 104 Key Keyboard
- Adelong 6013 ATX Tower Case
- 56K Internal Modem
- Steinberg Cubase 5 VST 32

$7,599 SYADE190

Flexirent $70.15*







3 Year Onsite Warranty*

Sound

Midex 8 USB MIDI Interface



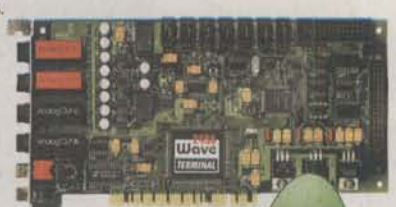
Midex 8 is the latest innovation in MIDI interface technology from Steinberg featuring 8 independent MIDI in- and outputs in a slick 1-unit case. 8 separate MIDI in- and outputs, 128 independent MIDI channels. Easy plug & play USB interface, no external power supply necessary when used in standard USB mode Additional MIDI Thru feature and MIDI cable checker. Supports LTB - computer independent - sub-millisecond timing accuracy. Numbered MIDI port LEDs for activity monitoring Supplied with USB cable and rack-mounting kit

$1,179 MMSTE000

EGO-Sys Waveterminal 2496 SoundCard

The Waveterminal 2496 features balanced inputs/outputs, 24-bit AD/DA converter and full duplex recording and playback to ensure professional results.

- High quality 24 Bit/96kHz D/A convertors; 110dB Dynamic range and 128 x oversampling
- Signal -to - Noise Ratio (D/A), 110dB
- Analog 2 Inputs and 2 Outputs; +4 dBu Balanced/Unbalanced 1/4" phone jack
- 4 Channel Recording and 4 Channel playback (2 Ch. Analog/2 Ch. Digital) at the Same time



$825 MMEGO0000

Adelong Computers

Sales Hotline 02 8344 3190
RESELLER ENQUIRIES WELCOME
*Please read our Terms and Conditions

HEAD OFFICE & SERVICE
54 Rosebery Avenue
Rosebery NSW 2018
Ph: (02) 8344 3188
Fax: (02) 9697 9777

SYDNEY CITY STORE
127 York Street
Sydney NSW 2000
Ph: (02) 9267 5272
Fax: (02) 9267 5042

INTERNET WEB SITE:
http://www.adelong.com.au
email: info@adelong.com.au





Notebook

TOSHIBA

The award winning series of Satellite notebook PC's offer the ideal balance in affordability and performance. Every Satellite is built with the right mix of features to help you power through your day-to-day computing requirements. Whether for business or pleasure, the Satellite range is the perfect choice to take you into the new world.

Satellite Pro 4330XCDT

Intel Celeron 650Mhz
10Gb Hard Drive
Integrated CD Rom
64Mb Ram
Internal Fax Modem
14.1" TFT Screen
Windows 98SE



$3,819

NBTOS089

Flexirent $36.23

Satellite Pro 4380XDVD

Intel Pentium III 750Mhz
12GB Hard Drive
64MB Ram (Max 360MB)
Internal Fax Modem
14.1" TFT Screen
Windows 98SE



$4,625

NBTOS090

Flexirent $42.69

Tecra 8100 Speed Step

Intel Pentium III 750Mhz
128MB Ram (Max 512MB)
20GB Hard Drive
Internal DVD-Rom
Internal Fax Modem
14.1" TFT Screen
Windows 98SE



$6,635

NBTOS087

Flexirent $58.38

adaptec SCSI Cards

SCSI CARD 39160

The Adaptec SCSI Card 39160 delivers all-out performance for high-end servers. Combining a 64-bit PCI interface with two Ultra160 SCSI channels, the Adaptec SCSI Card 39160 supports up to 30 devices, making it ideal for connecting external drive arrays and mirroring and striping SCSI hard disk drives.



CCADA004 **$795**

SCSI CARD 19160

The Adaptec SCSI Card 19160 is the top performance/value choice for desktop users. It delivers Ultra160 SCSI technology at an affordable price. This card offers the best connectivity for internal hard drives, internal and external desktop peripherals.



CCADA006 **$559**

SLIM CARD 1480

Connect with SlimSCSI 1480 and dramatically improve system I/O performance. Enjoy the same fast performance and multitasking you'd get on a desktop PC--plus the convenience of instant plug-in connections and hot-swaps.



CCADA018 **$399**

2906 PCI CARD FOR DESKTOP PCS

Connect up to 7 SCSI devices and gain great performance by moving to SCSI with the Adaptec 2906. Run your ZIP drive or Scanner up to 6 times faster than with a parallel port connection. Adaptec EZ-SCSI Software is included to help you manage your peripherals.



CCGEN021 **$125**

ADAPTEC 29160 SCSI CARD

The Adaptec 29160 SCSI Card is tailored to the needs of small multi-user work group servers and powerful workstation users. This PCI card gets the most out of high-performance Ultra160 SCSI internal hard drives and the widest selection of popular external SCSI devices.



29160N 32 Bit PCI CCADA002 **$705**

29160 64 Bit PCI CCADA003 **$749**

EASY CD CREATOR 4 DELUXE

Easy CD Creator 4 Deluxe goes way beyond the software that came with your CD-Recorder, and all earlier deluxe editions. Now it's easier than ever to create music, photo, video, and data CDs.



$159 SWADA000

ADAPTEC GOBACK

GoBack 2.2 gives you the power to immediately undo common user errors and serious system problems on your PC. Go back in time and retrieve lost data, unfreeze your computer, recover from a nasty computer virus, retrieve a folder or a document that was accidentally deleted. Maybe you want to go back and return your computer to the way it was before an unwelcome visitor came in and reformatted your hard drive? Well, wish no more. GoBack software can do all this and more.

7 Reasons You Need GoBack

- Automatic Protection - Continuous Security
- Hard Drive Revert - Go Back In Time
- System Recovery - Windows Won't Boot? Don't Worry...
- User-friendly Software - Don't Waste Time Troubleshooting
- File Versioning and Recovery - Easily Create and Recover Versions
- Chronological Event log -View-Click-Recover
- Virtual Drive - Easily view a drive as it used to be



$135 SWADA002

Adelong Computers

Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday
Sales Hotline 02 8344 3190

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190

Upgrade Bundles

Upgrade your old system with an Adelong Upgrade Bundle

From basic users wishing to prolong the life of their PC, to power hungry gamers and multimedia enthusiasts, Adelong Computers have an upgrade bundle to suit. Choose from over 50 upgrade bundles online, from a simple overhaul to suit your needs. Alternatively you can call or email our sales staff for a quotation on the upgrade bundle that you need. All upgrade bundles include both a power supply and CPU fan and are shipped unassembled. Pre-assembly is available upon request.

Desktop Upgrade Bundle

A low cost upgrade for workstations and home computers.

- AMD Duron 750Mhz CPU
- Gigabyte GA-7IXE4 Mainboard
- Adelong ATX Tower Case

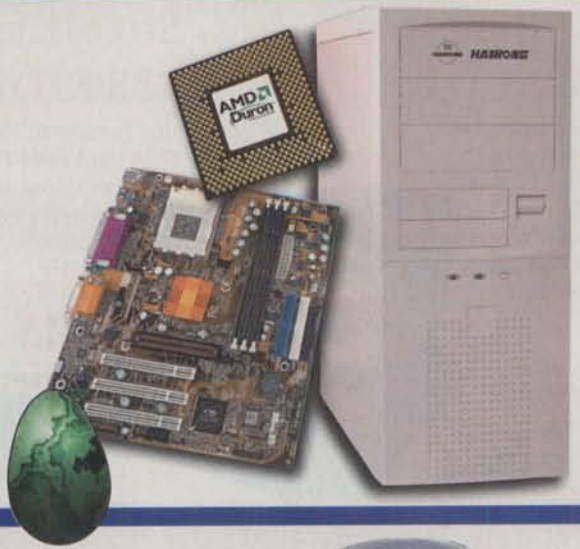
$369*

SPADE049

- Intel Celeron 700Mhz CPU
- Gigabyte GA-6VXE7+ Mainboard
- Adelong ATX Tower Case

$395*

SPADE048



Power Upgrade Bundle

Upgrade to the latest in performance for a fraction of the cost of a new PC.

- AMD Athlon 1.2Ghz CPU
- MSI K7T Turbo-R Mainboard
- 256Mb PC-133 SDRAM
- Adelong 6000P ATX Tower Case

$1,149*

SPADE051

- Intel Pentium III 1Ghz CPU
- MSI 815EP PRO-R Mainboard
- 256Mb PC-133 SDRAM
- Adelong 6000P ATX Tower Case

$1,255*

SPADE050



Gamer Upgrade Bundle

High framerate performance upgrade for the serious gamer.

- Intel Pentium 4 1.4Ghz
- Gigabyte GA-8TX Mainboard
- 128mb 800MHZ ECC RAMBUS RIMM
- Adelong 6016 ATX Tower Case
- Guillemot 3D Prophet II GTS Ultra 64MB

$3,149*

SPADE052

- AMD Athlon 1.2Ghz 266Mhz CPU
- Gigabyte GA-7DX Mainboard
- 128MB PC2100 DDR Ram
- Adelong 6016 ATX Tower Case
- Guillemot 3D Prophet II GTS Ultra 64MB

$2,345*

SPADE053



*Prices and specifications subject to change without notice

Adelong Computers

Sales Hotline 02 8344 3190
RESELLER ENQUIRIES WELCOME
*Please read our Terms and Conditions

HEAD OFFICE & SERVICE
54 Rosebery Avenue
Rosebery NSW 2018
Ph: (02) 8344 3188
Fax: (02) 9697 9777

SYDNEY CITY STORE
127 York Street
Sydney NSW 2000
Ph: (02) 9267 5272
Fax: (02) 9267 5042

INTERNET WEB SITE:
http://www.adelong.com.au
email: info@adelong.com.au



Adelong Upgrade Solutions

Upgrade your PC easily and quickly with an Adelong Upgrade Solution. Each package is completely assembled with Windows pre-installed for hassle free upgrading.

$50 Trade in for your old PC on all Upgrade Solutions!

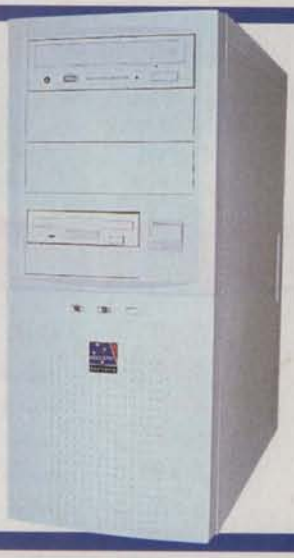
Desktop Upgrade Solutions

Intel Celeron 667
$1,365
SYADE177 Flexirent $14.31#

AMD Duron 750
$1,339
SYADE179 Flexirent $14.08#

Intel Pentium III 866
$1,659
SYADE178 Flexirent $16.83#

AMD Athlon 900
$1,509
SYADE180 Flexirent $15.46#



- 128MB 133MHz SDRAM
- 20G 7200Rpm ATA100 Hard Drive
- TNT2 M64 32Mb Display Card
- Creative Soundblaster Live Value
- 52x CD-Rom
- 1.44MB Floppy Drive
- ATX Minitower Case
- Windows Millenium Edition
- 3 Year Onsite Warranty

Gamer Upgrade Solutions

Intel Pentium 4 1.3Ghz with 128MB 800Mhz Rambus Ram
$3,925
SYADE181 Flexirent $37.15#

AMD Duron 850Mhz with 128MB PC1600 DDR Ram
$2,759
SYADE183 Flexirent $27.23#

Intel Pentium 4 1.5Ghz with 128MB 800Mhz Rambus Ram
$4,625
SYADE182 Flexirent $42.69#

AMD Athlon 1.2Ghz with 128MB PC2100 DDR Ram
$3,175
SYADE184 Flexirent $31.15#



- 30GB ATA100 7200Rpm Hard Drive
- Guillemot 3D Prophet II GTS 64Mb AGP
- Creative SoundBlaster Live Value
- 16x DVD-Rom Drive
- 32x10x4x CD-RW Drive
- 1.44MB Floppy Drive
- Adelong 6013 ATX Tower Case
- Windows Millenium Edition
- 3 Year Onsite Warranty

Multimedia Upgrade Solutions

Intel Celeron 733
$2,229
SYADE185 Flexirent $22.85#

AMD Duron 800
$2,209
SYADE187 Flexirent $22.62#

Intel Pentium III 1Ghz
$2,699
SYADE186 Flexirent $26.54#

AMD Athlon 1.2Ghz
$2,605
SYADE188 Flexirent $25.62#



- 256MB PC133 SDRAM
- 40GB ATA100 7200Rpm Drive
- GeForce II MX Display Card with TV Output
- Creative SoundBlaster Live Platinum 5.1
- 16x DVD-Rom Drive
- 1.44MB Floppy Drive
- Adelong 6000P ATX Tower Case
- Windows Millenium Edition
- 3 Year Onsite Warranty

Adelong Computers

*Prices and specifications subject to change without notice

Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday
Sales Hotline 02 8344 3190

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190

UPS

APC

"Industry standard reliable & affordable backup power solution"

Back-UPS - Best Value power protection for your PC

- Compact Design
- Protect your PC, Monitor, Laser printer with 1 device
- Full-time EMI/RFI filters for noise filtration
- Lightning and surge suppression to protect your hardware
- Support for up to 4 Devices

Description	Price	Code
Back-UPS 500VA	$235	PSAPC000
Back-UPS 300VA	$169	PSAPC008
Back-UPS 650VA	$299	PSAPC009

Smart-UPS - Power Management for advanced networks

- Full-time Surge Suppression and Noise Isolation
- User replaceable, hot swappable batteries
- Software configurable features, data logging on 1000/700 model
- Site-wiring fault indicator

Description	Price	Code
Smart-UPS 420VA	$395	PSAPC010
Smart-UPS 620VA	$525	PSAPC011
Smart-UPS 700VA	$699	PSAPC003
Smart-UPS 1000VA	$1015	PSAPC004

Power Supplies

Description	Price	Code
200W AT POWER SUPPLY	$39	PSGEN000
230W ATX POWER SUPPLY	$45	PSGEN002
300W ATX POWER SUPPLY	$55	PSGEN003
350W ATX POWER SUPPLY	$69	PSGEN011
300W P4 ATX POWER SUPPLY	$65	PSGEN012
300W Redundant ATX POWER SUPPLY	$469	PSGEN014

Case

ADELONG DELUXE MINI CASE AT

W: 180mm
D: 340mm
H: 390mm
Power Supply: 230W ATX

$45 CAADE000

ADELONG ATX CASE AT/ATX

W: 200mm
D: 450mm
H: 410mm
Power Supply: 250W ATX

$55 CAADE014

DELUXE AT/ATX 250 WATT DESKTOP CASE

W:442mm
D:473mm
H:x155mm
Power Supply: 250W ATX

$85 CAADE012

ADELONG 6000PATX CASE

W: 180mm
D: 445mm
H: 420mm
Power Supply: 300W ATX

$135 CAADE018

ADELONG 6016 ATX CASE

W: 180mm
D: 445mm
H: 420mm
Power Supply: 250W ATX

$79 CAADE021

ADELONG 6013 ATX CASE

W: 180mm
D: 445mm
H: 420mm
Power Supply: 250W ATX

$79 CAADE025

CPU FAN

$25 MSADE017

CASE FAN

Distance between screw holes
80mm
90mm

$15 MSADE010

MOBILE RACK

ATA/66 $29 MSADE020
EIDE $25 MSADE000

Adelong Computers

Sales Hotline 02 8344 3190
RESELLER ENQUIRIES WELCOME
*Please read our Terms and Conditions

HEAD OFFICE & SERVICE
54 Rosebery Avenue
Rosebery NSW 2018
Ph: (02) 8344 3188
Fax: (02) 9697 9777

SYDNEY CITY STORE
127 York Street
Sydney NSW 2000
Ph: (02) 9267 5272
Fax: (02) 9267 5042

INTERNET WEB SITE:
http://www.adelong.com.au
email: info@adelong.com.au

Hard Drives

Quantum

Quantum Fireball AS

- Ultra ATA/100
- 8.5ms Seek Time
- 7200 RPM

20GB **$249** HDQTM084
30GB **$309** HDQTM085
40GB **$339** HDQTM086
60GB **$499** HDQTM087

Quantum Fireball LCT20

- Ultra ATA/100
- 12ms Seek Time
- 5400 RPM

20GB **$219** HDQTM088
30GB **$249** HDQTM089
40GB **$319** HDQTM090



Seagate

Seagate Barracuda III

- Ultra ATA/100
- 8.9ms Seek Time
- 7200 RPM

20GB **$249** HDSGT047
30GB **$285** HDSGT052
40GB **$395** HDSGT057

Seagate U Series 5

- Ultra ATA/100
- 8.9ms Seek Time
- 5400 RPM

20GB **$209** HDSGT054
30GB **$249** HDSGT055
40GB **$289** HDSGT056



IBM

IBM Deskstar GPX

- Ultra ATA/100
- 8.5ms Seek Time
- 7200 RPM

20GB **$259** HDIBM046
30GB **$309** HDIBM051
45GB **$399** HDIBM048
60GB **$479** HDIBM049
75GB **$849** HDIBM050

IBM Deskstar GV

- Ultra ATA/100
- 9.5ms Seek Time
- 5400 RPM

20GB **$229** HDIBM054
30GB **$259** HDIBM055
40GB **$299** HDIBM056



HITACHI

Hitachi 2.5" Notebook

- ATA/5 Enhanced IDE
- 12ms Seek Time
- 4200 RPM

6GB **$269** HDHIT004
9GB **$345** HDHIT009
12B **$365** HDHIT007
20GB **$509** HDHIT008



Memory

DDR SDRAM

- 168 Pin DIMM Module
- For use with Cyrix, AMD K6-2/3 & Athlon, Intel Pentium II/III & Celeron Processors

128MB PC1600 DDR SDRAM **$419** RAGEN038
256MB PC1600 DDR SDRAM **$799** RAGEN039
128MB PC2100 DDR SDRAM **$455** RAGEN040
256MB PC2100 DDR SDRAM **$899** RAGEN041

EDO RAM

- 32-bit Memory
- Use with 486 and older Pentium systems
- Used in Pairs in Pentium Systems

16MB EDO SIMM 72Pin **$109** RAGEN005
32MB EDO SIMM 72Pin **$209** RAGEN006



133Mhz SDRAM

- 133Mhz 168Pin DIMM Module
- Designed for use with Intel Pentium III Processors equipped with 133Mhz Front Side Bus
- Compatible with existing PC100 Mainboards

64MB PC133 SDRAM **$55** RAGEN029
128MB PC133 SDRAM **$99** RAGEN030
256MB PC133 SDRAM **$225** RAGEN031

64MB PC100 SDRAM **$59** RAGEN022
128MB PC100 SDRAM **$125** RAGEN023



RAMBUS RAM

128mb 800MHZ ECC Rambus RIMM **$559** RAGEN034
256MB 800MHZ Rambus RIMM **$1099** RAGEN037

Adelong Computers

Processors

CALL OUR SALES TEAM FOR THE LATEST PRICING ON THESE PRODUCTS

Intel Celeron Processor

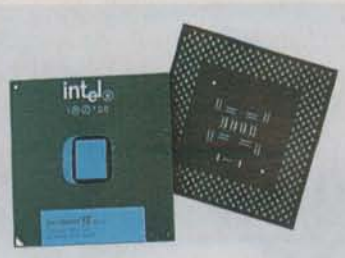
Get great performance for your personal computing and office needs with the Intel Celeron Processors. Intel Celeron processors give you quick, responsive performance for today's business applications and provide cost-effective managed client solutions for any environment.



Model	Price	Code
Intel 667Mhz Celeron Processor FCPGA S370	$189	CPINT058
Intel 700Mhz Celeron Processor FCPGA S370	$209	CPINT060
Intel 733Mhz Celeron Processor FCPGA S370	$215	CPINT061
Intel 766Mhz Celeron Processor FCPGA S370	$275	CPINT062
Intel 800Mhz Celeron Processor FCPGA S370	$329	CPINT065

Intel Pentium III Processor

The new range of Intel Pentium III Processors feature 256Kb of Advanced Transfer Cache - a mechanism which matches the cache speed to the speed of the processor. Available in 100Mhz and 133Mhz front side bus speeds.



Model	Price	Code
Intel 850Mhz Pentium III Processor 256K ATC FCPGA	$499	CPINT055
Intel 1Ghz Pentium III Processor 256K ATC Slot 1	$699	CPINT064
Intel 800EB Pentium III Processor 256K ATC 133Mhz FCPGA	$445	CPINT051
Intel 866Mhz Pentium III Processor 256K ATC 133Mhz FCPGA	$475	CPINT056
Intel 933Mhz Pentium III Processor 256K ATC 133Mhz FCPGA	$579	CPINT059
Intel 1Ghz Pentium III Processor 256K ATC 133Mhz FCPGA	$675	CPINT063

Intel Pentium 4 Processor

The Intel Pentium 4 processor maximizes the performance of cutting-edge technologies such as digital video and online gaming, and has an innovative design capable of taking full advantage of emerging Web technologies.



Model	Price	Code
Pentium 4 Processor 1.3Ghz with SSE2 and MMX	$1149	CPINT068
Pentium 4 Processor 1.4Ghz with SSE2 and MMX	$1235	CPINT066
Pentium 4 Processor 1.5Ghz with SSE2 and MMX	$1829	CPINT067

AMD Athlon Processor

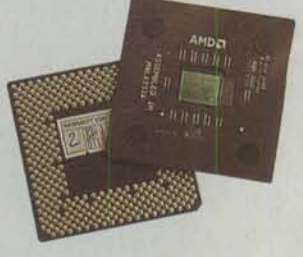
This is the world's most powerful engine for x86 computing, as well as industry's first seventh-generation x86 microarchitecture. It is designed to power the next generation in x86 platforms. Professionals working with image processing, CAD and digital content creation will benefit from the superior processing power of the Athlon Processor. Computing enthusiasts who want the highest performance to run the latest 3D games and multimedia will demand desktop powered by the Athlon Processor.



Model	Price	Code
AMD Athlon™ Processors 900Mhz with 3DNow!™ Technology	$305	CPAMD038
AMD Athlon™ Processors 950Mhz with 3DNow!™ Technology	$345	CPAMD042
AMD Athlon™ Processors 1Gz with 3DNow!™ Technology	$389	CPAMD039
AMD Athlon™ Processors 1.1Gz with 3DNow!™ Technology	$479	CPAMD043
AMD Athlon™ Processors 1.2Gz with 3DNow!™ Technology	$555	CPAMD044
AMD Athlon™ Processors 1Gz Processor 266 Mhz	$Call	CPAMD048
AMD Athlon™ Processors 1.13Gz Processor 266 Mhz	$Call	CPAMD049
AMD Athlon™ Processors 1.2Gz Processor 266 Mhz	$Call	CPAMD050

AMD DURON Processor

Employing all the benefits of its innovative design, the AMD Duron processor meets the requirements of today's most demanding value-conscious buyers without compromising their budget. With a sophisticated cache architecture, high speed system bus and superscalar floating point unit, the AMD Duron offers a 25% increase in performance over its competitors. Please refer to our web page for the latest information on the AMD Duron processor and available platforms.



Model	Price	Code
AMD Duron™ Processor 750Mhz with 3DNow™ Technology	$145	CPAMD045
AMD Duron™ Processor 800Mhz with 3DNow™ Technology	$175	CPAMD046
AMD Duron™ Processor 850Mhz with 3DNow™ Technology	$225	CPAMD047

Adelong Computers

Sales Hotline 02 8344 3190
RESELLER ENQUIRIES WELCOME
*Please read our Terms and Conditions

HEAD OFFICE & SERVICE
54 Rosebery Avenue
Rosebery NSW 2018
Ph: (02) 8344 3188
Fax: (02) 9697 9777

SYDNEY CITY STORE
127 York Street
Sydney NSW 2000
Ph: (02) 9267 5272
Fax: (02) 9267 5042

INTERNET WEB SITE:
http://www.adelong.com.au
email: info@adelong.com.au

GIGABYTE ASUS MSI



MSI K7 Master- S

Socket A for AMD(R) AthlonT / DuronT 600~1GHz
AMD(R) 761 chipset / VT82C686B
133MHz (266MHz Internal System Bus)
184-pin DDR-DIMM x4, maximum 4GB
AGP x1, CNR x1, PCI x5
On-Board IDE Ultra DMA 33 / 66 / 100, Ultra 160 SCSI

$Call MBMSI009



MSI K7 Master

Socket A for AMD(R) AthlonT / DuronT 600~1GHz
AMD(R) 761 chipset / VT82C686B
133MHz FSB(266MHz Internal System Bus)
184-pin DDR-DIMM x4, maximum 4GB
AGP x1, CNR x1, PCI x5
On-Board IDE Ultra DMA 33 / 66 / 100

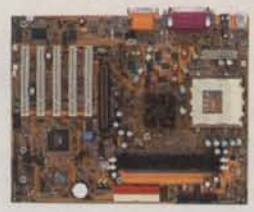
$Call MBMSI008



Gigabyte GA-7DX

Socket A for AMD Athlon/Duron200/266MHz FSB processors
AMD-761 & VIA 686B Chipsets.
AC97 codec + Creative CT5880 sound
2 DDR DIMMs to 2GB of PC2100/PC1600 SDRAM
1 x AGP, 5 x PCI, 1 x AMR slots.
UDMA ATA 100/66 IDE

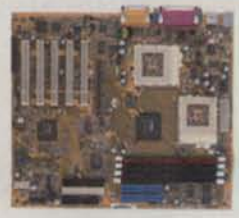
$389 MBGIG046



Gigabyte GA-7DXC

Socket A for AMD Athlon/Duron 200MHz processors
AMD-761 & VIA 686B Chipsets
AC97 codec + Creative CT5880 sound chip
2 DDR DIMMs to 2GB of PC1600 SDRAM
1 x AGP, 5 x PCI 1 x AMR slots
UDMA ATA 100/66 IDE ports

$349 MBGIG047



MSI 694D Pro Air

Dual Socket 370 for Intel Pentium III (FC-PGA) Processors
VIA(R) 694XDP & VT82C686A chipsets.
Promose ATA 100 Raid Controller
Four DIMM to 2.0GB SDRAM
One AGP 4x, One CNR, Five PCI slots.
4 Ultra DMA 100 + 4 Ultra DMA 33 / 66
Integrated Sound Blaster / Direct Sound AC97 Audio

$369 MBMSI005



MSI K7T Turbo-R

Socket A for AMD Athlon/Duron processor 600MHz~1.5GHz or higher.
VIA KT133A & VT82C686B chipsets.
Three DIMMs to 1.5GB PC100/PC133 SDRAM.
1 x AGP, 1 CNR, 6 PCI Bus slots
Ultra DMA33/66/100 EIDE
Promise IDE RAID On-Board
AC'97 Audio

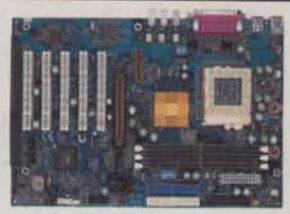
$295 MBMSI006



Gigabyte GA-8TX

Intel 850 Chipset
PGA 423 socket for Intel® Pentium® 4 processor
400MHz Front Side Bus
4 RIMMs up to 2GB PC800 RDRAM
Creative CT5880 PCI sound
UDMA ATA 100/66/33 IDE device
1 x AGP Pro, 1 x CNR, 5 x PCI slots

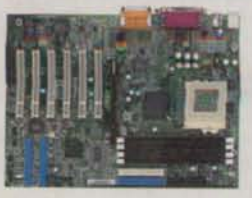
$455 MBGIG043



GA-6VX7-1394

VIA Apollo Pro Family AGPset
Socket 370 for Intel® and other compatible processors
3 x DIMM to 1.5GB SDRAM
1 x AMR, 1 x AGP, 5 x PCI, 1 x ISA slot, 3 x 1394 I/O connectors
2 x Ultra DMA33/66 Bus Master IDE

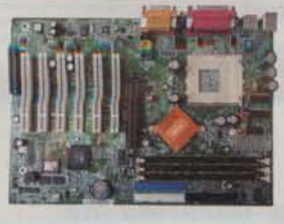
$229 MBGIG038



MSI 815EP Pro-R

Socket 370 for Intel Pentium III (FC-PGA)/Celeron Processor
Intel 815EP & Intel ICH2 chipsets.
Four DIMM sockets to 2.0GB SDRAM.
One CNR, One AGP, Six PCI slots.
2 x ATA66/100 EIDE + 2 x ATA100 IDE Raid Controllers.
Integrated 4 Channel ICH2 Audio chip.

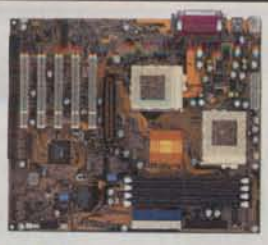
$279 MBMSI007



MSI K7T Pro 2A

VIA KT133 chipset
Socket A for AMD Athlon /Duron processor and supports 600MHz ~ 1.2GHz or higher
3 x DIMM to 1.5GB SDRAM
2 x IDE Controllers Supporting UDMA 33/66/100
1 AGP, 1 CNR, 6 PCI Expansion slots
2 serial ports; 1 parallel port; 4 USB ports; 1 IrDA, 1 Audio/Game port

$255 MBMSI004



Gigabyte GA-6VXDC7

VIA Apollo Pro Family AGPset
Dual Socket 370 for Intel® FC-PGA Pentium® III and other compatible processors
4 x DIMM to 1.5GB SDRAM
1 x AGP, 5 x PCI, 1 x ISA slot
2 x Ultra DMA 33/66 bus master IDE

$219 MBGIG039



ASUS A7V133

Supports AMD Athlon/Duron 550MHz ~ 1GHz CPU.
3 x DIMM to 1.5GB SDRAM.
Ultra DMA/100 and DMA/66 support
1 x AGP, 4 x PCI and 1 x PCI/AMR
266/200MHz Front Side Bus

$295 MBASU012

Adelong Computers

Graphic Cards



3D Prophet II GTS Ultra

- Geforce2 Ultra Processor
- 64MB DDR Ram
- 128-bit Memory Interface
- 230MHz Memory Clock (x2) operates at 460MHz
- 250MHz Core clock
- 350MHz RAMDAC
- 2 Giga Texels/second
- 31.25 million Triangles/sec
- TV-Out and DVI-Out
- 7.36GB/s Internal chipset bandwidth

GTS Ultra
$879
DCGUI010



3D Prophet II GTS Pro

- Geforce2 Pro Processor
- 64MB DDR Ram
- 128-bit Memory Interface
- 200MHz Memory Clock (x2) operates at 400MHz
- 200MHz Core Clock
- 350MHz RAMDAC
- 6.4GB/s Internal chipset bandwidth
- 1.6 Giga Texels/second
- 25 million Triangles/sec.
- TV-Out

$565
DCGUI011



3D Prophet II GTS

- Geforce2 GTS Processor
- 32/64Mb DDR Ram
- 333Mhz Memory Clock
- 200Mhz Core Clock
- 1.6 Gigatexels per second

GTS 64MB
$469
DCGUI007



3D Prophet II MX Dual-Display

- Geforce2 MX Twin ViewT Processor
- 32MB Ultra Fast RAM
- VGA + TV Dual-Display support
- 128-bit Memory bus
- 183MHz RAM clock
- 175MHz Core clock
- 2.8GB/s Internal bandwidth
- 700 MegaTexels/second
- TV-Out

$239
DCGUI012

3D Prophet II MX
$215
DCGUI008



RT2000 Video Editing Card

- True THREE-LAYER realtime editing (Two video plus graphics)
- Realtime broadcast-quality 3D effects
- Realtime native DV and MPEG-2 editing
- Analog and digital video input/output
- MPEG-2 output
- Integrated Matrox Millennium Flex 3D Edition Display Card
- Stereo audio input/output genlocked to video ensures perfect lip-sync



$2659 DCMAT041

Matrox G200 Multi Monitor

- Matrox G200 graphics chip
- Single PCI card for Dual or Quad output
- Up to 32 MB of memory
- 250 MHz RAMDAC for flicker-free displays
- 1800x1440 or 1920x1200 desktop per chip
- Support for up to 16 monitors



32MB Quad with TV Tuner
$1725 DCMAT045

32MB Quad
$1509 DCMAT044

16MB DualHead
$1085 DCMAT043

The Marvel G400-TV

- 16MB SGRAM
- Matrox G400 256-bit DualBus graphics chip
- Integrated 300MHz UltraSharp RAMDAC
- Hardware-MJPEG video capture and editing
- TV tuning with fully programmable PC-VCR Remote
- Superior DVD playback and software DVD player
- MJPEG to MPEG2 conversion software
- Audio, Video and TV connection with Marvel connector box



$709 DCMAT038

Matrox Millenium G450

- 0.18-micron technology
- 256-bit DualBus architecture
- 64-bit Double Data Ram
- Matrox 's DualHead Display allows support of any two of the following displays:
- monitor, TV
- analog flat panel, digital flat panel
- 32-bit Z-buffer including 8-bit stencil buffer
- 360Mhz primary RAMDAC



16MB
$255 DCMAT043

32MB
$349 DCMAT040

Cougar Video Edition

Complete Solution for Home Video Editing

- NVIDIA TNT2 M64 chipset
- 32MB RAM
- 125Mhz Core Clock
- 300Mhz Ramdac
- 128-bit 3D processor
- 8.3 million triangles/sec
- 250 million texture-mapped pixels/sec



PCI
$275 DCGUI004

AGP
$275 DCGUI005

TNT2 M64 Display Card

- 128-bit Graphic Engine
- 64-bit Frame Buffer
- 32Mb Ram
- 300Mhz Ramdac
- 24-bit Z Buffer



AGP
$109 DCPRO002

AGP TV OUT
$135 DCPRO003

PCI TV OUT
$155 DCPRO004

GeForce2 MX

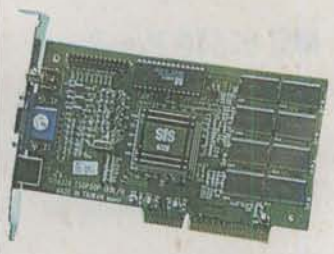
- nVIDIA 2nd Generation 256-bit GeForce2 MX GPU.
- Integrated 2ND- generation T&L engine.
- 700-Mtexels Fill Rate.
- 20M triangles/sec setup.
- Independent Full Scene Multisample Anti-aliasing.
- 32-bit color with 32-bit z/stencil.
- DirectX and S3TC texture compression

AGP TV OUT
$205 DCEAG009

AGP TV OUT
$215 DCEAG010

8MB AGP

The Magic 8MB AGP Graphics Accelerator is ideal for budget upgrades.



$59 DCPRO002

Sales Hotline 02 8344 3190
RESELLER ENQUIRIES WELCOME
*Please read our Terms and Conditions

HEAD OFFICE & SERVICE
54 Rosebery Avenue
Rosebery NSW 2018
Ph: (02) 8344 3188
Fax: (02) 9697 9777

SYDNEY CITY STORE
127 York Street
Sydney NSW 2000
Ph: (02) 9267 5272
Fax: (02) 9267 5042

INTERNET WEB SITE:
http://www.adelong.com.au
email: info@adelong.com.au

Adelong Computers

Internet Keyboard

Includes 10 hot keys on a comfortable design that also features a detachable palm rest for added comfort. Hot Keys allow instant access to email and internet functions.



$45 IOMST015

Natural Keyboard Pro

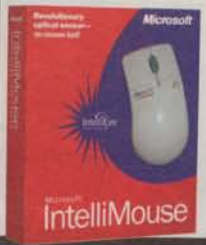
The new ergonomic Microsoft® Natural® Keyboard Pro features 19 "Hot Keys," which link directly to applications on your PC and the web. Plug in up to 2 USB devices directly into your keyboard.



$95 IOMST014

IntelliMouse IntelliEye

The IntelliMouse with IntelliEye gives you superior precision with its revolutionary optical sensor that scans your desktop 1,500 times a second. It also features an ergonomic design and a wheel for efficient zooming and scrolling.



$69 IOMST013

IntelliMouse Explorer

Point and click with pinpoint accuracy-literally! The new IntelliMouse Explorer from Microsoft is so advanced, it doesn't need a mechanical ball as its been replaced with the new IntelliEye optical sensor, which provides consistent accuracy and control on virtually any surface.



$79 IOMST012

Cordless Wheel Mouse

Fast scrolling with cordless freedom. A comfortable, rounded shape provides easy control for right and left hands. Logitech's innovative wheel design provides both a true scroll wheel and the extra convenience of a third mouse button.



$79 IOLOG026

Cordless MouseMan Wheel

The Cordless MouseMan® Wheel combines cordless freedom of movement with a sleek, comfortable shape that offers unique soft-touch sides. Logitech's advanced digital radio technology eliminates the struggle with cords.



$95 IOLOG028

Cordless Freedom Navigator

With convenient Internet and multimedia control, access the Internet; visit Web pages; open e-mail; search; play CD/DVD's and WindowsTM media files, adjust volume, and more with one touch of a key.



$195 IOLOG033

Cordless Desktop Pro

Comfortable rounded mouse provides precise control for left and right hands. With convenient iTouchTM Internet and multimedia control. Includes the batteries that power the keyboard and mouse for up to a year.



$215 IOLOG029

Logitech® QuickCam® VC PC Video Camera

- Works with Windows 95 and Window 98videoconferencing solution that brings the excitement, and expressiveness of video communications to your desktop.
- Capture still images and video clips in colour



USB

$169 IOLOG014

Logitech® QuickCam® Express USB



Easy to install - Plugs in and installs in minutes
Capture stills and video with the touch of a button
E-mail photos quickly and easily - no camera required at the other end. For USB-enabled PCs. Comes with Microsoft NetMeeting, Audio Wizard for microphone installation (microphone not included), Microsoft Internet Explorer

OEM **$95** IOLOG023

Logitech® QuickCam® Web



Capture video, create web pages, make video calls over the Internet, video monitoring, and more. Now anyone can add exciting pictures to their email and send them to friends or broadcast live video and audio over the Internet.

$169 IOLOG034

THRUSTMASTER® Gaming

Ferrari 360 Modena

The officially Ferrari® licensed 360 Modena® replica racing wheel is equipped with comfortable rubber textured handgrips and authentic F1 gearshift levers as well as dual acceleration and braking systems with either progressive wheel mounted levers or stable foot pedals. An easy to clamp central fixation system provides gamers with maximum stability for hours of virtual race track fun and excitement.



Ferrari Force Feedback Racing Wheel
$205 IOGUI007

$85 IOGUI004

Top Gun Fox 2

The Top Gun™ Fox™ 2 Joystick is both ergonomic and highly realistic. This innovative, high-quality stick includes a sliding thumb throttle, realistic masked Fox 2 button, 2 quick-action buttons and rubber-textured grip.



$39 IOGUI005

Top Gun Afterburner Force Feedback

The Top Gun™ AfterBurner™ Force Feedback Joystick brings full-flight excitement to your gaming. Features a full-sized detachable throttle, 2 powerful motors and up to 60 programmable functions. For use with PC and iMac™



Also available
Top Gun Afterburner
$105 IOGUI008

$145 IOGUI006

Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday
Sales Hotline 02 8344 3190

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190

Video Editing

miroVIDEO DC1000



- Video resolution: 720x576 (PAL) or 720x480 (NTSC), studio quality, compatible with Betacam and DV
- Maximum bit rate: 50 Mbit/sec in dual-stream mode
- Encoding methods: MPEG-2 IP format, 422P@ML
- Bit rate control: constant (CBR) or variable bit-rate (VBR)
- Playback mode: dual stream 2 video files via one mixer
- Real-time effects: titles, filters, and 200 crossfades and dissolves without software rendering
- Production length: up to 3 hrs. Video productions larger than 2Gbytes
- Audio processor: Perfect, lip-synching audio processing in CD or DV quality
- Video overlay: real-time monitoring on computer screen.
- Video Standards: PAL, NTSC
- Standard ports: S-Video (Y/C) and composite (CVBS)
- Professional, real-time-capable video processing software.



$4895 mmpin006

miroVIDEO DC30 PLUS



- The Pinnacle DC30Plus is designed to edit and professionaly finish non-linear video.
- Constant data rate up to 7 MB per second
- Motion-JPEG compression with adjustable ratios of 2,5 : 1 (NTSC) or 3 : 1 (PAL) up to 32 : 1 at the full resolution
- Up to 30/25fps; 60/50 fields per second for NTSC/PAL
- Resolution of up to 640 x 480 (NTSC) or 768 x 576 (PAL/SECAM)
- Audio signal 0 dB, -20 dB selectable
- Includes Adobe Premier 5.1

$1525 MMPIN005

miroVIDEO STUDIO DC10 PLUS



- DC10plus is a Motion-JPEG PCI board that allows full-screen video capture at 768x576 resolution with a maximum data rate of 6 MB per second.
- Up to 25fps Video capture rate(PAL)
- Up to 768 x 576 YUV 4:2:2 Capture Resolution
- Motion-JPEG compression ratio selectable from 3,5:1 up to 43:1 at full resolution
- 1 Composite (RCA jack), 1 S-Video, PAL/NTSC/SECAM Inputs
- 1 Composite (RCA jack), 1 S-Video, PAL/NTSC Outputs

$585 MMPIN004

STUDIO PCTV USB

The PCTV USB Box can easily be connected to both a computer and a laptop giving you the freedom to use it when and where you want. Its the perfect companion for your video capture board as it supports TV output allowing full-resolution overlay and recording.



- Studio PCTV external box with USB interface
- USB connection cable, length 1.8 m
- Audio cable 3.5 mm stereo jack, length 1.8m
- Pinnacle Systems Studio editing software
- Pinnacle Systems TitleDeko
- Pixélan Video Spice Rack o SonicDesktop Smartsound
- TV application for Windows® 98
- FM radio application for Windows98
- MS Internet Explorer with MS Netmeeting®
- Real Networks RealProducer G2

$399 MMPIN003

SwannFire CardBus

Now NoteBook owners can take advantage of the speed and convenience of FireWire transfer rates. The SwannFire CardBus is a full function 1394 solution for Notebooks.

- 400 Mbps max transfer rate (50 MB/sec)
- Max 63 devices, 4 pin and 6 pin computer and consumer device connections
- TI (Texas Instrument) Chipset



- OS 9.0 (recommended), or Windows 98SE/2000/ME
- 3 Port PHY layer connector and interface
- Asynchronous data transfers is supported
- Supports real-time-critical applications such as video
- Supports non real-time-critical applications like printers, scanners.

$195 CCSWA002

Swann VideoWorks Pro



A full Digital Video editing package. Includes: Swann PCI PnP Firewire card, headset inc. mic, IEEE1394 A/V Cable, over $490 worth of software: Main Actor video editing suite, Swann Video Works, U-Lead Video StudioV4.0, Kais Power Goo, Kais Soap 2.

$299 CCSWA001

Swann Firewire



Simply plug this PCI card into your windows 98 computer for instant firewire capability. This card gives you 3 Firewire ports at a full 400Mbps. This card allows you to connect up the latest DV cameras and new high speed firewire hard drives. All of this for cheaper than you can get the latest in SCSI technology.

$169 CCSWA000

Dynalink TView TV Tuner with FM

The Dynalink MagicTView is a reliable, affordable, and compact all-in-one remote controlled FM radio and TV video capture card.



- 181 Channel Cable Ready TV Tuner Function
- 16-Channel Preview Function
- Auto-Scan Tuning of Broadcast and Cable TV Channels
- AVI Video Capture Compatible
- YUV 4:2:2 Quality with RGB 32,24,15 Format
- Inputs: Coax, Composite, S-Video, CVBS
- Full Screen (640x480) Capture Capability (requires RCA/S-Video CamCorder)

$149 MMDYN002

Adelong Computers

Sales Hotline 02 8344 3190
RESELLER ENQUIRIES WELCOME
*Please read our Terms and Conditions

HEAD OFFICE & SERVICE
54 Rosebery Avenue
Rosebery NSW 2018
Ph: (02) 8344 3188
Fax: (02) 9697 9777

SYDNEY CITY STORE
127 York Street
Sydney NSW 2000
Ph: (02) 9267 5272
Fax: (02) 9267 5042

INTERNET WEB SITE:
http://www.adelong.com.au
email: info@adelong.com.au

Guillemot Maxi Studio ISIS XL



$685 MMGUI001

- 2 MIDI ports
- External 20-bit converters
- 4 selectable hardware synchronization clocks
- Higher bandwidth allows enhanced multi-track recording capabilities
- Sampling memory expandable to 36 MB

Guillemot Maxi Sound Fortissimo XL



$85 MMGUI002

- YAMAHA audio processor.
- 2 or 4 Speaker Support.
- Optical Digital Output
- Built-in Yamaha XG synthesizer (with 2MB MIDI hardware wavetable)

JNL 7001 DVD Player



- Dual Laser Technology
- Built in Dolby Digital AC3 Decoder
- Supports RCA, SVHS, Optic Fibre & Coaxial(audio) Output
- Karaoke function with 2 mic inputs & Echo control
- PAL/NTSC Compatible with Multi Zone support
- Compatible with DVD/VCD/CD-R/CD-RW/MP3 Disks

$495 MMJNL001

JNL 7002 DVD Player



- Built in Dolby Digital AC3 Decoder
- Supports RCA, SVHS, Optic Fibre & Coaxial(audio) Output
- Karaoke function with 2 mic inputs & Echo control
- PAL/NTSC Compatible with Multi Zone support
- Compatible with DVD/VCD/Audio CD's

$395 MMJNL000

Turtle Beach Montego II



- 18-bit ADC and DAC Audio Converter
- 20 Hz - 20 kHz Frequency Response (+/-1 dB)
- 96 hardware digital mixers
- 320 voice advanced wavetable synthesis
- Hardware-based MPU-401 MIDI UART-compatible interface

$65 MMGUI005

VideoLogic SonicFury



- Cirrus Logic Crystal 4630 Audio Processor
- 64 voice hardware wavetable engine.
- 8MB DLS synthesizer
- Dual AC-97 2.1 audio codecs with hardware full-duplex
- 18-bit A/D converters
- 20-bit D/A converter

$339 MMTUR007

Creative SoundBlaster Live Platinum 5.1



- EMU 10K1 Synthesizer Chip
- Synthesizer Type Wavetable (Scalable PCI)
- Up To 32MB RAM Based on System RAM
- 48 MIDI Channels
- Full Duplex
- 16-bit Max. Recording Depth
- 48 KHz Max. Recording Rate
- 16-bit Max. Playback Depth
- 48 KHz Max. Playback Rate
- Signal-to-Noise Ratio >96 dB

$439 MMGUI045

Creative SoundBlaster Live Player 5.1



Live Value OEM

$115 MMGUI038

$189 MMCRE072

Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday
Sales Hotline 02 8344 3190

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190

Adelong Computers

Speakers



Microlab M-400E Speakers

The Microlab M-400E Slimline Speakers are designed for small workspaces, while maintaining high quality sound output.

- 36 Watt RMS
- 3" sattelite driver
- 4" woofer driver
- 35Hz - 18Khz Frequency Response



$99 MMMIC000

Microlab M-400P Speakers

Designed to be as unobtrusive as possible, the Microlab M-400P Flat Panel Sattelites can be wall mounted and can be fitted with photographs while maintaining audio quality.

- 36 Watt RMS
- Flat speaker sattelites
- 4" woofer driver
- 35Hz - 18Khz Frequency Response



$119 MMMIC001

Microlab M-800C Speakers

Microlab M-800C Speakers offer the big bass performance of a 3-piece system at the price of a 2-piece system.

- 40 Watt RMS
- 3" sattelite driver
- 5.25" woofer driver
- 35Hz - 18Khz Frequency Response



$89 MMMIC002

Microlab M-800B Speakers

The Microlab M-800B 4.1 Speakers offer incredible surround sound performance at an affordable price.

- 48 Watt RMS
- 3" sattelite driver
- 5.25" woofer driver
- 35Hz - 18Khz Frequency Response



$135 MMMIC003

Philips A1.2 Fun Power

- 2 x 1.5 watts RMS speakers for connection to a stereo sound card, CD/casstte/MP3 player or other audio-visual sources.
- Bass Boost and Bass Reflex System.
- Magnetically Shielded.



$29 MMPHI000

Philips A1.2 Fun Power Plus

- Active 10 watts from two 5 watt desktop speakers for connection to a stereo sound card, CD/cassette/MP3 player, etc.
- Bass boost and Bass Reflex System.
- Magnetically shielded.



$49 MMPHI001

Philips A2.3 Speaker System

- Active High Power 32 Watts RMS 3 piece speaker system (2 x 6W speakers and 1 x 20W subwoofer).
- High Quality sound, Compact Powerful Subwoofer, High Clarity Satellite speakers
- Remote Control, Bass Boost, Magnetically shielded.



$99 MMPHI002

PCWorks Four Point Surround FPS1000

Get ready for the real 3D audio surround gaming experience with the FPS1000. With four compact amplified satellite speakers, separate subwoofer, two rear stands and the single master volume control, FPS1000 is the first complete four-channel speaker system for the PC.



$165 MMCRE033

ALTEC LANSING ACS22 Tower Speaker

Powerful sound from a two tower system
Ideal for those consumers who need excellent PC audio output, either for teleconferencing, games or music CDs, but who do not have a requirement for a subwoofer. Excellent value for money.

- Small footprint with headphone output
- 5 Watts RMS Power
- Produces powerful audio output from two satellites



$65 MMALT008

ALTEC LANSING ACS45.1 PowerCube Speaker

Introducing the Altec Lansing ACS45.1 PowerCube Speakers, a three piece multimedia audio solution at an unbelievable price. Experience the enhanced output of the PowerCube satellite system . Great for games and CD's, the ACS45.1 will bring hi-fi audio to your computer desktop today.

- 12 Watts Satellite Power
- 3" full range driver
- 20 Watts RMS
- 6" subwoofer

PC MAGAZINE AUSTRALIA EDITORS' CHOICE



$195 MMALT001

ALTEC LANSINGACS54 PowerPlay Plus Speaker

5-Piece system designed especially for the sound demands of gamer's. PowerPlay Plus is the only speaker system designed especially for gamer's that provide high quality, powerful surround sound game audio output. This 5-piece system provide a true multidimensional surround sound experience

- 20 Watts Satellite Power
- 20 Watts Subwoofer Power
- Unique Bracket/stands provide convenient mounting possibilities for surround speaker



$239 MMALT009

ALTEC LANSING ACS33 PowerCube Speaker

3-Piece system dramatically enhances PC Audio
The PowerCube Speaker system with its compact satellites delivers powerful audio playback from a 3-piece system. Active subwoofer can be set for desired bass response and the electronic controls on the satellites adjust the volume for both satellites and subwoofer simultaneously.

- 10 Watts Satellite Power
- Volume control and Power ON L.E.D
- 15 Watts Subwoofer Power



$115 MMALT005

Adelong Computers

Sales Hotline 02 8344 3190
RESELLER ENQUIRIES WELCOME
*Please read our Terms and Conditions

HEAD OFFICE & SERVICE
54 Rosebery Avenue
Rosebery NSW 2018
Ph: (02) 8344 3188
Fax: (02) 9697 9777

SYDNEY CITY STORE
127 York Street
Sydney NSW 2000
Ph: (02) 9267 5272
Fax: (02) 9267 5042

INTERNET WEB SITE:
http://www.adelong.com.au
email: info@adelong.com.au

PHILIPS

107T 17"
Real Flat Monitor



- For use with MAC and PC
- Flicker free display up to 1280 x 1024 @ 71 kHz
- Real Flat High Contrast CRT with 0.25 mm dot pitch
- LightFrameTM for brightest display of movie and photo windows
- XSD- Xtra Space DesignTM: maximum depth of only 419 mm / 16.5"

$539 MOPHI004

109P20 19"
Real Flat Monitor

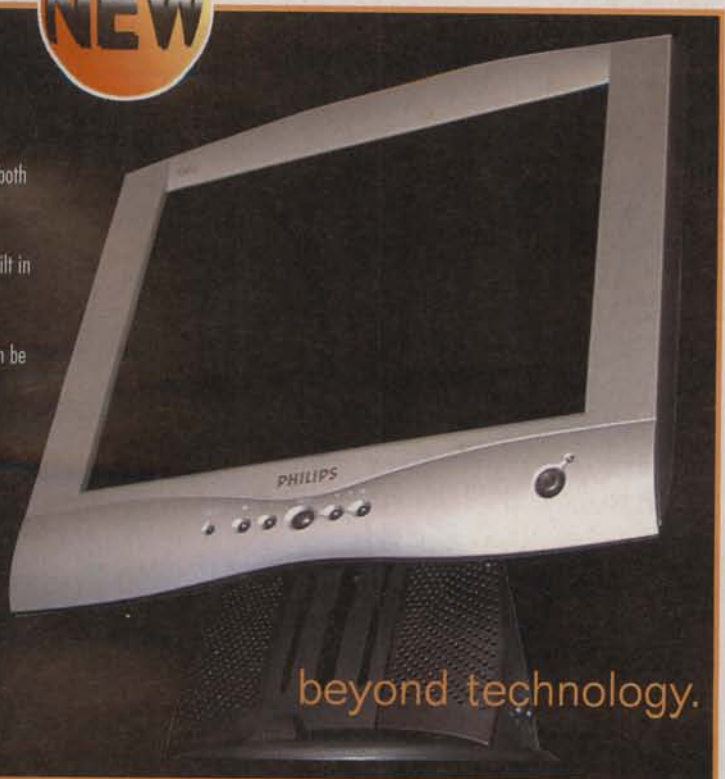


- Autoscan Technology- up to 1920 x 1440 @ 111kHz
- Real Flat Aperture Grille CRT with 0.24mm Grille Pitch
- Worlds shortest 19" footprint at 438mm depth
- PC and Mac compatible

$1,065 MOPHI005

150X

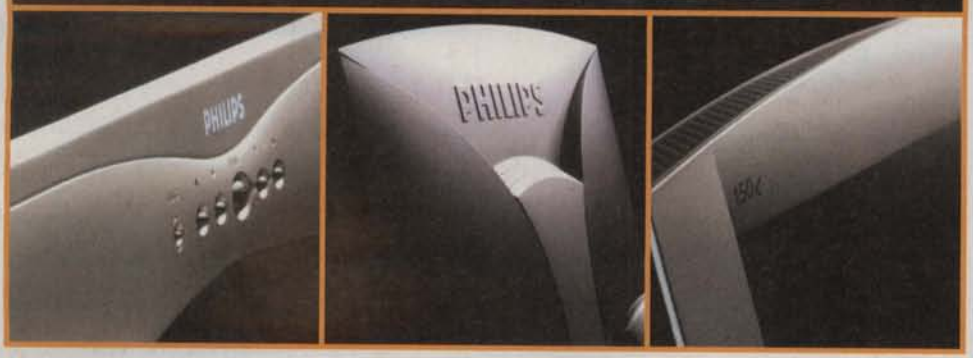
NEW



- Ergonomically designed with both height and tilt adjustment
- Multimedia enhanced with built in speakers and microphone
- Coloured side pannels that can be changed to suit your mood
- 15.1" LCD TFT Screen
- Reccomended resolution of 1024 x 768
- 160 degree viewing angle

$Call MOPHI010

beyond technology.



201P10 21"
Real Flat Monitor



- Autoscan Technology, offering up to 2048 x 1536 @ 121kHz
- Real Flat Aperture Grille CRT with 0.24mm Grille Pitch
- Worlds shortest 21" footprint at 466mm depth
- PC and Mac compatible

$1,795 MOPHI006

140S 14"
LCD Monitor



- Analog video interface with advanced one touch AUTO adjustment for full compatibility with standard video cards
- Most compact design 165mm depth with cable management
- Less than 60% foot print of comparable CRT monitors

$1,695 MOPHI007

150P 15"
Brilliance LCD



- 60% smaller footprint-only 165mm deep
- Dual input-Accepts both DVI Digital and VGA input
- Advanced AUTO adjustment automatically optimises picture quality
- Built-in, front-firing stereo speakers and microphone for video conferencing and multimedia applications

$1,895 MOPHI008

170B 17"
LCD Monitor



- Dual input-accepts both DVI Digital and VGA input
- Advanced AUTO adjustment automatically optimises picture quality
- Wide viewing angle technology
- 181 mm footprint with full detachable cables

$3,695 MOPHI009

Adelong Computers

MITSUBISHI ELECTRIC
EXCELLENCE THROUGH INNOVATION

Mitsubishi DV151 15" LCD TFT Display



- 15" TFT-LCD Monitor
- Display size 307.2(H) x230.4(V)mm
- Pixel pitch 0.30(H) x768(V)
- Resolution 1024(H) x76 (V)
- Weights 6kg,

Boasts the same effective screen area as a 17" monitor

$1,835 MOMIT018

Mitsubishi DV170 17" LCD TFT Display



- 17" TFT-LCD Monitor
- Display size 307.2(H) x230.4(V)mm
- Pixel pitch 0.30(H) x768(V)
- Resolution 1024(H) x76 (V)
- Weights 6kg,

$3,415 MOMIT020

Mitsubishi DV180 18" LCD TFT Display



- 18.1" MULTIMEDIA TFT-LCD Monitor
- Display size 359(H) x287.2(V) mm
- Pixel pitch 0.2805(H) x0.2805(V) mm
- Resolution 1280(H) x1024(V)
- Weights 9.8kg,

Boasts the same effective screen area as a 19" monitor

$5,329 MOMIT017

Mitsubishi CD-RW Drives

Diamond Data CD-RW Drives 30x6x4 / 30x8x4



- Buffer: 2MB (30x6x4)/8MB(30x8x4)

Pack includes:
- CD-RW Drive
- 1x CD-RW Disk
- Easy CD Creator™
- Director™
- CD Copier Deluxe™
- Audio Cable & Screw

32x12x8x **$345** MMMIT016

32x10x4 **$285** MMMIT014

Mitsubishi Voice Modems

Diamond Voice modems are an ideal choice for internet, data telephone answering and fax applications. They provide support for the unified V.90 standard as well as K56flex, giving a maximum download speed of 56 Kbps*.



External **$99** FMMIT002

Internal **$49** FMMIT003

Mitsubishi DVD-ROM



16X (21 600 KB per second) Data Transfer Rate from DVD-ROM discs
40X (6 000 KB per second) Data Transfer Rate from CD-ROM discs
Includes Cyberlink PowerDVD Playback Software for DVD,
Audio and MP3 Reads DVDs and CDs as well as Recordable DVD and CD formats Plug and Play Installation Low Vibration Mechanism

52xx EIDE CD-ROM **$75** MMMIT017

16x DVD-ROM **$199** MMMIT008

Mitsubishi Diamond View Scanners

DV648U



DV648U 600 dpi Flatbed Scanner with USB Interface Ideal for home and office use. Scans pages and photographs quickly and easily with an optical resolution of up to 600 x1200 dpi. The DV648U is easy to install, thanks to its USB interface.

DV648U **$125** IOMIT003

DV648UT

DV648UT - Transparency and Film Scanning, with USB Interface and 600 dpi optical resolution. A added advantage of being able to scan positive or negative films, slides and other transparent objects. Film frames, a slide holder and a 35 mm film strip holder is included.

DV648UT **$249** IOMIT004

Mitsubishi Diamond View Scanners

DV1248VT



The 1200 x 2400 dpi resolution and high dynamic colour range of the DV1248ST make it ideal for high-end business and graphics applications. Scans transparencies and film up to 254 x 200 mm as well as pages, photographs and documents up to 356 x 216 mm.

Features:
* 1200 x 2400 dpi optical resolution (19200 x 19200 max)
* 36 bit CCD image sensor 36 bit colour
* TWAIN compliant
* 48 bit Windows software colour enhancement

DV1248ST **$999** IOMIT005

Sales Hotline 02 8344 3190
RESELLER ENQUIRIES WELCOME
*Please read our Terms and Conditions

HEAD OFFICE & SERVICE
54 Rosebery Avenue
Rosebery NSW 2018
Ph: (02) 8344 3188
Fax: (02) 9697 9777

SYDNEY CITY STORE
127 York Street
Sydney NSW 2000
Ph: (02) 9267 5272
Fax: (02) 9267 5042

INTERNET WEB SITE:
http://www.adelong.com.au
email: info@adelong.com.au

Adelong Computers



***Australia Wide 3 Year On Site Warranty**

ADELONG australia

Mitsubishi Diamond View 1554r 15"

- 15" Monitor ideal for home users
- Dynamic Focus picture tube
- 13.9" Viewable, 0.28 dot pitch
- Max Resolution 1024 x 768 @65Hz
- Weighs 12.5kg



$279 MOMIT021

Mitsubishi Diamond View 1570i 15"

- 15" Monitor ideal for SOHOs
- Dynamic Focus picture tube
- 13.9" Viewable, 0.28mm dot pitch
- Max Resolution 1280 x 1024 @60Hz
- On Screen Display
- Weighs 12.5kg



$329 MOMIT022

Mitsubishi Diamond View 1770G 17"

- 17" Monitor for daily users
- High Contrast CRT
- 15.9" Viewable, 0.27mm dot pitch
- Max Resolution 1280 x 1024 @60Hz
- On Screen Display
- Weighs 17.4kg with OSD



$395 MOMIT014

Mitsubishi Diamond View 1772if 17"

- 17" Monitor
- 15.9" Viewable, 0.26mm dot pitch
- Max Resolution 1280 x 1024 @60Hz
- On Screen Display
- Weighs 17.4kg



$519 MOMIT019

Mitsubishi 1995SL 19" Display

- High contrast 19" short length picture tube
- 18" viewable, 0.26mm dot pitch
- Max resolution 1600 x 1200 pixels at 75 Hz
- On Screen Display.
- Windows® 95, 98, Me and 2000 and Apple Macintosh compatible.



NEW

$395 MOMIT005

Mitsubishi Diamond View 17NF 17"



DIAMONDTRON NF
NATURAL FLAT CRT TECHNOLOGY

- 17" Natural Flat Monitor
- 16" Viewable image
- Distortion - free flat screen
- 0.25mm stripe pitch
- Max Resolution 1600x1200 @ 75Hz
- Weights 19.2kg,

$635 MOMIT015

Mitsubishi Diamond View 19NF 19"



DIAMONDTRON NF
NATURAL FLAT CRT TECHNOLOGY

- 19" Natural Flat Monitor
- 18" Viewable image
- Distortion - free flat screen
- 0.25mm stripe pitch
- Max Resolution 1600x1200 @ 85Hz
- Weights 28.2kg,

$1,075 MOMIT016

Mitsubishi Diamond View 2107 21"

- 21" Monitor for professionals
- 20" Viewable, 0.26mm dot pitch
- Max Resolution 1600 x 1200 @85Hz
- Weight 30kg
- On Screen Display
- BNC & 15Pin Input

Editor's Choice apcmag
APC MAGAZINE APRIL 1999



$1,795 MOMIT006

Adelong Computers

Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday
Sales Hotline 02 8344 3190

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190

Storage

iomega

Zip 250 USB

All the benefits of the Zip 250 plus all the advanced features of the USB technology. True hot plugging technology and super fast USB connection. The new drive is compatible with both Windows and Macintosh, it also features a compact ultra thin case.



$425 BUIOM040

1.44Mb Floppy Why Bother???

250MB Zip + PCMCIA Bundle

$449 BUIOM043

Zip Drives

Increase your storage quickly, easily and economically - as you need it. With a 100MB Zip Drive you can take your data anywhere at anytime. Each disk stores 100MB of data and you can add them, as your needs grow. Available in Parallel, SCSI, Internal IDE and the new USB interface. You also get Zip tools on CD.



IDE ATAPI OEM	$125	BUIOM007
100MB EXT PARALLEL ZIP Drive	$229	BUIOM000
100MB USB ZIP Drive	$225	BUIOM026

Zip 250

SuperFloppy Preferred By Millions

The new drive comes in two flavors: parallel port (for PC's) and SCSI (for Mac's or PC's with a SCSI connection). Zip 250 SCSI drive users will benefit from a performance boost, up to 56 times faster than standard floppy drives and 1.4 times faster than external CD-ROM drives. Best of all, current Zip 100 drive users need not worry about their investment in 100MB Zip using 250MB media).

- Proven Reliability • Large 250Mb Capacity
- Compatible with 100Mb Zip Disk
- 50% faster than the original Zip 100 drive.



PARALLEL	$345	BUIOM033
SCSI	$349	BUIOM032
Internal IDE	$349	BUIOM044
Internal IDE OEM	$215	BUIOM046

ZipCD

The ZipCD 4x4x6 external USB drive will enable PC and Macintosh® computer users to record, archive, share, and distribute up to 650MB of data on a common CD format. The ZipCD USB drive is high-capacity, and ideal for saving and sharing. The USB interface allows quick and easy installation and "plug-and-play".

External USB $529 MMIOM001



Internal IDE 32/12/10	$565	MMIOM003
Internal IDE 32/8/4	$315	MMIOM002
Internal Predator 32/8/4	$629	MMIOM004

CD-R/RW

PLEXTOR

PLEXWRITER 12/10/32A

$715 MMPLE001



- Achieved Ultra High Recording Quality with 12X Write Speed and 10X Rewrite Speed
- BURN-Proof (Buffer Under RuN-Proof) Technology is Supported
- Wide CD-R and CD-RW Media Compatibility

Storage

ORB

CASTLEWOOD

Look at the power ORB delivers!

- *3.5 hours of audio*
- *2+ hours of video*
- *2,000+ colour photographs*
- *22 100MB floppy disks*
- *SCSI, EIDE or Parallel Port versions*
- *1500+ 1.44MB floppy disks*
- *3+ CD ROM games*



ORB Internal IDE 2.2GB	$345	BUORB000
ORB Internal IDE OEM 2.2GB	$315	BUORB006
ORB Internal SCSI 2.2GB	$359	BUORB002
ORB Internal SCSI OEM 2.2GB	$325	BUORB007
ORB External SCSI 2.2GB	$419	BUORB003
ORB External USB 2.2GB	$429	BUORB004
ORB Disk 2.2GB	$65	BUORB005
ORB Internal IDE OEM 5.7GB	$615	BUORB008
ORB External IDE Firewire 5.7GB	$869	BUORB009
ORB 5.7GB Disk	$89	BUORB010

ADELONG australia

Adelong Computers

Sales Hotline 02 8344 3190
RESELLER ENQUIRIES WELCOME
*Please read our Terms and Conditions

HEAD OFFICE & SERVICE
54 Rosebery Avenue
Rosebery NSW 2018
Ph: (02) 8344 3188
Fax: (02) 9697 9777

SYDNEY CITY STORE
127 York Street
Sydney NSW 2000
Ph: (02) 9267 5272
Fax: (02) 9267 5042

INTERNET WEB SITE:
http://www.adelong.com.au
email: info@adelong.com.au

LACIE

ADELONG australia

Lacie DVD-RAM Drives

The LaCie DVD-RAM drive brings rewritable DVD technology to desktop computing. It offers up to 9.4GB of removable storage, combining CD, DVD and back-up capabilities in one drive, and is ideal for Windows and Macintosh users.



LaCie External 9.4GB Firewire DVD-Ram Drive	**$1,449**	MM-LAC008
LaCie External 9.4GB SCSI DVD-Ram Drive	**$1,449**	MM-LAC010

Lacie CD-RW Drives

LaCie external CD-RW drives offer the best in flexibility and performance with a range of connectivity. The USB, SCSI and Firewire drives include Easy CD Creator 4.0, Direct CD and Toast 4.1 for cross platform sharing.



4x4x24x USB	**$499**	MMLAC000
8x4x32x Firewire	**$569**	MMLAC001
16x10x40x Firewire	**$869**	MMLAC012
12x10x32x SCSI	**$685**	MM-LAC014
16x10x40x SCSI	**$785**	MM-LAC01

Welcome to the LaCie connectivity revolution. Utilising either the FireWire or USB interface for MacOS, windows 98 and Windows 2000, Lacie External hard disk drives offer the ultimate portable storage solution. With a simple cable and hot-plug capability, the LaCie range of external hard disk drives are ideal for portable mass storage. The FireWire and Pocket Hard Drives go even further, offering RAID 0 as a standard feature.

Lacie FireWire External Hard Drives

LaCie External FireWire Hard Drives offer up to 14Mb/s sustained transfer rate, making them ideal for multimedia or large files.



20GB	**$559**	HDLAC000
40GB	**$685**	HDLAC008
60GB	**$809**	HDLAC009
75GB	**$1,369**	HDLAC010

Lacie USB/FireWire Pocket Hard Drives

Offering both USB and FireWire connectivity, LaCie Pocket Hard Drives offer the widest range of connectivity to todays portable computers.



10GB	**$869**	HDLAC004
20GB	**$1,185**	HDLAC005
30GB	**$1,489**	HDLAC007

Lacie External USB Hard Drives

Increase the storage space on your portable computer, or transfer data quickly and easily between your desktop and notebook with the LaCie external USB drive.



20GB **$495** HDLAC006

Argosy USB/PC-Card Hard Drive Case

Available in either USB or Type II PC-Card, and supporting 2.5" Hard Drives up to 20GB, Argosys Hard Drive cases are the perfect solution for upgrading your notebook storage needs.



USB Interface **$129** CAARG000

PCMCIA Type II Interface **$129** CAARG001

Argosy CD-RW

Record CD's Quickly and easily with the Argosys RW860 External CD-RW Drive.

PCMCIA 24x4x4x CD-RW Drive **$515** MMARG000

USB 24x4x4x CD-RW Drive **$515** MMARG001



Also Available

PCMCIA 24x CD-Rom **$289** MMARG002

USB 24x CD-Rom **$309** MMARG003

PCMCIA DVD-Rom **$565** MMARG004

Adelong Computers

Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday
Sales Hotline 02 8344 3190

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190

Switches / Hubs

HEWLETT PACKARD

Procurve Switches

10/100/Gigabit modular switch providing the easiest way to build a high-availability backbone for maximum uptime.
HP ProCurve Switch 8000M
$2,815 NWHPD015

10/100/Gigabit desktop switch ideal for scalable, expandable, low-cost migration to 10/100/Gigabit switching to the desktop.
HP ProCurve Switch 4000m
$4,529 NWHPD017

A low cost, managed 24-port, expandable 10/100 Ethernet desktop switch ideal for low-cost migration to 10/100 switching.
HP ProCurve Switch 2424M
$2,909 NWHPD012

An affordable high-speed switch that offers fast, reliable, manageable connectivity and is ideal for easy migration to fast performance and for server farm connectivity.
HP ProCurve Switch 1600M
$2,249 NWHPD016

Procurve Hubs

Low cost 10/100 hubs ideal for connecting workgroups with a mix of 10Mbps and 100Mbps devices as well as for any workgroup that is migrating from 10Base-T to 100Base-TX.

HP ProCurve 10/100 Hub 12M
$1,175 NWHPD001

HP ProCurve 10/100 Hub 12
$679 NWHPD003

HP ProCurve 10/100 Hub 24
$1,145 NWHPD004



Cost-effective 10Base-T hubs ideal for building a new network or expand an existing one.

HP ProCurve 10Base-T Hub 12
$269 NWHPD007

HP ProCurve 10Base-T Hub 24M
$725 NWHPD010

HP ProCurve 10Base-T Hub 12M
$539 NWHPD008

HP ProCurve 10Base-T Hub 8
$145 NWHPD011

HP ProCurve 10Base-T Hub 24
$449 NWHPD009

Modems

Swann

SwannSmart II 56K



Simplicity and stability are what made this modem win a 'best buy' award against 17 leading-brand modems tested. The Swann Smart II 56K External Modem's clever upright design, not only takes up less desk space, but defies heat, the enemy of all modems. Perfect for the family and new computer user and those new to the internet.

External **$175** FMSWA007

Swann Speed Demon



The Swann SpeedDemon 56K External Modem offers speed and reliability, with voice/fax/data capabilities and great value for money.

$95 FMSWA004

SwannSmart USB Modem



The SwannSmart USB V.90 modem is bus powered, so there's no need for extra power supply cables. Smooth, sleek styling and cool colours ensure the SwannSmart USB modem complements any PC. The compact design fits easily on the smallest desktop. Not much bigger than your mouse, the SwannSmart USB modem travels well with your Notebook or Laptop.

$99 FMSWA010

SwannSmart PC Card II



Surf the Web, send and receive e-mails and faxes with the SwannSmart II PC Card.
Excellent for international business communication.
Complies with international modem standards.
Fax and data compatible.
Simple to install and easy to use.
5 year guarantee

$189 FMSWA009

XIRCOM

RealPort2 Integrated PC Cards

Xircom's RealPort Integrated PC Cards connectors are built right in. don't have to worry about lost cables. Choose from two Integrated PC Card solutions. RealPort2 Integrated PC Cards offer mix and match flexibility with the benefits of robust built-in connectors.



CardBus Ethernet 10/100
$299 NWXIR010

GlobalACCESS Modem
$379 NWXIR011

RealPort Ethernet 10/100+Modem 56

The RealPort Ethernet 10/100+Modem 56 combines 10/100Mbps Ethernet, 56K modem, GSM, AMPS cellular and ISDN connectivity, in a single cable-free Integrated PC Card solution. GlobalACCESS™ features make it easy to connect anywhere in the world.

$739 NWXIR008

ROADSTER

II ULTRA 56K

Great for gamer's as well as the business user, this modem features V90 as well as K56 flex protocols. Comes in either the new advanced USB interface or the traditional serial interface.



USB **$225** FMNET015

Serial **$199** FMNET012

BANKSIA

Wave II SP

The Wave SP 56 supports both V.90 and K56flex standards to ensure you can connect to the widest range of Internet Service Providers. With Simultaneous Voice & Data with speakerphone, digital line protection, fax capabilitiessmart & answerphone with multiple password protected mailboxes,the Banksia Wave II SP covers all of your telecommunication needs.



$205 FMBAN003

Adelong Computers

Sales Hotline 02 8344 3190
RESELLER ENQUIRIES WELCOME
*Please read our Terms and Conditions

HEAD OFFICE & SERVICE
54 Rosebery Avenue
Rosebery NSW 2018
Ph: (02) 8344 3188
Fax: (02) 9697 9777

SYDNEY CITY STORE
127 York Street
Sydney NSW 2000
Ph: (02) 9267 5272
Fax: (02) 9267 5042

INTERNET WEB SITE:
http://www.adelong.com.au
email: info@adelong.com.au

D-Link DES-1016R

16 Port Switch for Workgroups

Built with advanced functions, these switches are designed for the workgroups with advanced requirements. Powerful yet easy to use, they allow users to simply plug any prot to either a 10Mbps or 100Mbps node to multiply bandwidth, boost reponse time and satisfy heavy load demand. Rack mountable



$889 NWDLI032

D-Link DES-1008D

8 Port Fast Ethernet Switch

The D-Link DES -1008D is a powerful desktop Dual Speed 8-port 10/100Mb Ehternet/Fast Ethernet NWay auto-negotiating Switch.



$319 NWDLI055

D-Link DSL-200

USB ADSL Modem

The features are ; No wires needed, USB support for both Desktop PC's & Notebooks, Supports 40-Bit WEP encryption, Compatible with Window 98, ME, 2000 & NT, Plug-and-Play Installation.



NEW

$609 FWDLI006

D-Link DWL-120

NEW

Operates in 2.4GHz Direct Sequence Spectrum, Ideal for Notebooks, PCMCIA Bus. Supports 40 Bit WEP Encryption, Compatible with window 98, ME, 2000 & NT

$379 NWDLI063



DWL-500 D-Link Air Wireless PCI **$439** NWDLI060

DWL-1000AP D-Link Air Access Point **$1025** NWDLI059

DWL-650 D-Link Air Wireless PCMICIA **$305** NWDLI062

D-Link DI-701

Cable ADSL Gateway

The D-Link DI-701 Residential Gateway protects your computers from hackers or unwanted users. It is the easiest and safest way to share your high-speed internet connection with a DSL Modem or Cable Modem.



$419 NWDLI056

D-Link DU-560M

External 56K V.90 &K56 Flex USB Voice/Fax/Modem

Based on the ITU's fastest modem provides up to 56Kbps transmisson over the phone line. Small enough to fit in a pocket, this modem is the perfect solution for desktop and notebook computers. As a USB device, it is also the eaiest modem to install.



$95 FMDLI004

Model	Price	Code
DP-303 10/100 3 Port Print Server (1x Ser, 3x Par)	$345	NWDLI061
DFM-560E External 56K, V.90 Modem	$109	FMDLI000
DFM-560I Internal PCI V.90 56k Voice/Fax/Data Modem	$109	FMDLI001
DU-H4 4 Port USB Hub	$55	NWDLI037
DSL-100D PCI ADSL Modem	$339	FWDLI005

Model	Price	Code
DSL-300 Ethernet ADSL Modem	$915	FWDLI007
DFE-650TXD 10/100M No Dongle PC Card	$149	NWDLI054
DP-602 2 Port Internet Ready Server	$379	NWDLI024
DFE-530TX PCIBus 10/100 Base TX Fast Ethernet Adaptor	$45	NWDLI002
DES-1005D 5port 10/100mbs Ethernet Switch with 5xN-Way UTP ports	$165	NWDLI048

Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday
Sales Hotline 02 8344 3190

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190

Printers / Scanners

Canon

Refer to our website for a great range of Printer Cartridges



Adelong Computers

BJC-1000SP

- Everything you need. Vivid colours, even on plain paper, plus optional high speed black & white.

The PhotoRealism to provide the gold standard in photographic reproduction

- 4ppm Black / 0.5ppm Colour
- 720 x 360 DPI



$109

PRCAN039

BJC-2100SP

- The BJC-2100 Series Colour Bubble Jet Printer is the perfect choice for printing letters, full-colour Web pages, beautiful photos or personalized birthday greetings. It handles everything with ease and offers superb 720 x 360 dpi quality at a truly great value.
- Paralell & USB connectivity
- 720 x 360 DPI Resolution
- 5 ppm black / 2 ppm colour



$149

PRCAN040

BJC-3000

- Want photoquality colour and laser quality text, this versatile printer is breaking price barriers. Capable of 1440 dpi, it features separate ink tanks and easy to use USB connection as well as parrallel.
- 9ppm Black / 4ppm Colour
- 1440 x 720 DPI



$255

PRCAN034

BJC-6200

- Cost-effective, fast and immensely functional. The Canon BJC-6200 is the powerful print performer for busy offices. Boasting Canon's unique separate ink tank system to minimise waste and costs, and rapid print speeds of up to , this efficient Colour Bubble Jet printer makes high-volume printing truly swift and smooth, economical and efficient.
- Paralell & USB connectivity
- 0ppm Black / 7ppm Colour
- 1440 dpi



$375

PRCAN041

LBP-800

- Compact desktop 8ppm laser printer with face up or down paper delivery, 125 page Multipurpose Tray and single sheet Manual Feed Slot. Comprehensive job control via Canon Advanced Printing Technology driver software including Match Paper Size, Multipage per Sheet , collate, Form Overlay, Customer Paper Size, Toner Saver and Automatic Image Refinement modes.
- 8ppm
- 600 x 600 DPI



$539

PRCAN030

BJC-85

- The award-winning, portable BJC-85 Colour Bubble Jet Printer gives you the power to print wherever you go. It features a built-in USB and parallel port for connection to any compatible Mac® or PC; fast IrDA for wireless printing; dual voltage AC adaptor for hassle free world wide printing ;and the ability to become a colour scanner with the optional IS-12 Scanner Cartridge.
- 720x360 dpi in black and colour.
- Built-in USB and Parallel Port
- 5 ppm black / 2 ppm colour



$369

PRCAN038

Scanners

Canon

N-640P

- Parallel
- A4 36-bit Scanner
- 600 x 1200 DPI Optical Resolution
- Includes Canon Software Bundle

$155

IOCAN016

Parallel Interface

N-660U

- USB
- A4 36-bit Colour Scanner
- 600 x 1200 DPI Optical Resolution
- Includes Canon Software Bundle

$285

IOCAN017

600 x 1200 DPI

N-650U

- USB A4 36-bit Colour Scanner
- 600 x 1200 DPI Optical Resolution
- Windows 98, iMac & Mac G3 Compatible
- Includes Canon Software Bundle & Canon Mac Plug-in (Canon Scan Toolbox in Place of Scan gear Mac Adobe Photo Deluxe 20.)

$175

IOCAN014



Sales Hotline 02 8344 3190
RESELLER ENQUIRIES WELCOME
*Please read our Terms and Conditions

HEAD OFFICE & SERVICE
54 Rosebery Avenue
Rosebery NSW 2018
Ph: (02) 8344 3188
Fax: (02) 9697 9777

SYDNEY CITY STORE
127 York Street
Sydney NSW 2000
Ph: (02) 9267 5272
Fax: (02) 9267 5042

INTERNET WEB SITE:
http://www.adelong.com.au
email: info@adelong.com.au

Printers / Scanners

Refer to our website for a great range of Printer Cartridges

HEWLETT PACKARD

Deskjet 640

•Produce projects with photo-quality images and crisp black text for school and home easily, quickly and creatively with the new HP DeskJet 840C printer.

- 6.5ppm Black / 4.5ppm Colour
- 600 x 600 DPI Photo REt II



$175
PRHPD079

DeskJet 840

- Inexpensive and easy to use, the HP DeskJet 640C printer produces affordable, high-quality colour and black printing for all your home and school needs.
- 5ppm Black / 2.5ppm Colour
- 600 x 600 DPI
- Optional Photo printing.



$219
PRHPD080

DeskJet 930C

- This is the printer to get if you need top notch performance but don't have the space for it. With innovative features like print cancel button, this printer is both easy to use and setup. Utilising parallel and USB interfaces, this printer is compatible with PC and Mac.
- 9ppm Black / 7.5ppm Colour
- 2400 x 1200 DPI
- Photo REt 3



$265
PRHPD071

Deskjet 970Cxi

- The premier photo-quality printer for busy professionals who take their image very seriously. Featuring stunning photo-quality with PhotoREt 3, and laser like text at up to 12ppm. Innovations like automatic two sided printing, USB connection and extra large 150 sheet paper tray are exclusive to the 970Cxi.
- 12ppm Black / 10ppm Colour
- 2400 x 1200 DPI PhotoREt 3



$535
PRHPD063

LaserJet 1100

- You need the convenience and privacy of a personal printer.. With the HP LaserJet 1100 printer, you can put fast, personal laser printing for business right on your desk.
- 8ppm Black Laser
- 600 x 600 DPI
- 120 sheet paper tray
- Optional Scanner attachment



$735
PRHPD041

LaserJet 3150

- The HP LaserJet 3150 is a versatile business tool that delivers convenient printing, faxing, copying and scanning capabilities in a single laser device, and enables you to communicate more effectively with customers and clients.
- 6ppm Black Laser
- 600 x 600 DPI
- 100 sheet paper tray



$1235
PRHPD034

Scanners

HEWLETT PACKARD

ScanJet 3300C

For easy scanning and copying, try the HP Scanjet 3300C. Setup is a breeze with the USB interface and Windows 98. Just plug it in. You can scan or copy at the touch of a button.

- 36bit internal
- 600 x 1200 DPI
- 9600 DPI enhanced
- Windows 98 USB
- HP PrecisionScan LT with automated OCR
- Push button Scan and Copy



$159 IOHPD027

ScanJet 5300C

The HP ScanJet 5300C colour scanner delivers quality results up to three times faster than other scanners. One button starts any project! The HP ScanJet 5300C offers hassle-free connectivity through the parallel port, or Universal Serial Bus (USB).

- 36bit internal
- 600 x 1200 DPI
- 9600 DPI enhanced
- USB and Parallel port connection
- HP PrecisionScan 2.0 with automated OCR



$449 IOHPD029

ScanJet 6300C

Uncompromised speed and quality, the 6300C is HP's professional series scanner. Using Intelligent Scanning technology, the 6300C can eliminate all the steps that slow you down while delivering first class results.

- 36bit internal
- 1200 x 2400 DPI
- unlimited DPI enhanced resolution
- USB and SCSI
- HP PrecisionScan Pro with automated OCR
- Push button Scan, Copy, Email, Fax and File



$735 IOHPD026

Printers

EPSON

Epson Stylus Colour 580

The EPSON STYLUS COLOR 580 is ideal for home, school and home office use. It provides easy, plug-and-play support for Windows 98/2000 and USB equipped Macintosh systems, and comes with everything you need to print beautiful colour images from the moment you set it up.

- Up to 1440 dpi Photo quality printing resolution
- Up to 6.0ppm black text printing
- Windows and Mac compatible



$185
PREPS038

Epson Stylus Colour 680

Industry leading 2880 dpi print resolution and super fine 4pl Micro Droplets are just a couple of features delivered thanks to EPSON's state of the art EPSON Micro Piezo printing technology. Not only are images produced from this printer indistinguishable from photographs, Micro Piezo technology also ensures high-speed throughput with crisp, sharp text.

- Up to 2880 dpi Photo quality printing resolution
- Up to 8.0ppm black text printing*1
- Windows and Mac compatible



$279
PREPS039

Epson Stylus Photo 720

The EPSON STYLUS PHOTO 720's high-quality, 6-colour printing ensures superior results on everything from documents to greeting cards, photo stickers and t-shirt transfers. Combining the superior performance of EPSON's PPIS and 1440 dpi resolution, this new printer offers high image quality for the home and small business user. It also features 7 picolitre Ultra Micro Dots to deliver dazzling details superb image quality.

- Up to 4.3 ppm black text printing speed



$335
PREPS037

Sales Staff are Available
9am-6pm Monday to Friday,
10am-4pm Saturday
Sales Hotline 02 8344 3190

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Hotline 02 834[illegible]

Adelong Computers

Software





Symantec

Norton Antivirus 2001	$85	SWSYM025
Norton Systemworks 2001	$135	SWSYM026
Norton Systemworks 2001 Professional	$175	SWSYM027
Norton Utilities 2001	$85	SWSYM028
Norton Clean Sweep 2001	$65	SWSYM029
Norton Ghost 2001	$119	SWSYM030
Norton Internet Security 2001	$115	SWSYM031

Adobe

Adobe Photoshop 6.0	$1,545	SWADD012
Adobe Illustrator V9.0	$1,015	SWADD013
Adobe Publishing Collection 9 (Includes Photoshop 6, Illustrator 9, Acrobat 4, & Pagemaker 6.5 Plus)	$2,549	SWADD014
Adobe Design Collection 3 (Includes Indesign 1.5, Illustrator 9, Photoshop 6, & Acrobat 4)	$2,409	SWADD015
Adobe Pagemaker Plus 6.5	$1,269	SWADD016
Adobe Pagemaker Plus 6.5 Cross Platform Upgrade	$465	SWADD017
Adobe Premiere 5.1	$1,355	SWADD018
Adobe Premiere 6.0	$1,395	SWADD019
Adobe After Effects 5.0	$1,645	SWADD020
Adobe After Effects 5.0 Professional Edition	$3,789	SWADD021

Macromedia

Macromedia Director 8.0 Shockwave Studio	$2,185	SWMAC002
Macromedia Dreamweaver 4.0	$675	SWMAC003
Macromedia Dreamweaver UltraDev 4.0	$1,275	SWMAC004
Macromedia Fireworks 4.0	$675	SWMAC005
Macromedia Flash 5.0	$875	SWMAC006
Macromedia Freehand 9.0.1	$875	SWMAC007
Macromedia Dreamweaver/Fireworks Studio 4.0	$1,009	SWMAC008
Macromedia UltraDev/Fireworks Studio 4.0	$1,549	SWMAC009
Macromedia Flash/Freehand Studio	$1,275	SWMAC010
Macromedia Web Design Studio 4.0	$1,635	SWMAC011
Director 8.0 Shockwave Studio Upgrade from 5.0+	$1,099	SWMAC012
Director 8.0 Shockwave Studio Upgrade from 7.0	$875	SWMAC013
Macromedia Dreamweaver 4.0 Upgrade	$349	SWMAC014
Macromedia Dreamweaver UltraDev 4.0 Upgrade	$349	SWMAC015
Macromedia Fireworks 4.0 Upgrade	$349	SWMAC016
Macromedia Flash 5.0 Upgrade	$349	SWMAC017
Macromedia Freehand 9.0.1 Upgrade	$349	SWMAC018
Macromedia Dreamweaver/Fireworks Studio 4.0 Upgrade	$459	SWMAC019
Macromedia UltraDev/Fireworks Studio 4.0 Upgrade	$459	SWMAC020
Macromedia Flash/Freehand Studio Upgrade	$549	SWMAC021
Macromedia Web Design Studio 4.0 Upgrade	$1,099	SWMAC022

Quark

Quark Xpress 4.11	$3,225	SWQUA008
Quark Xpress Passport 4.11	$4,725	SWQUA009

Steinberg



Steinberg Cubase 5 VST 32	$1,395	SWCUB000
Steinberg Cubase 5 VST	$795	SWCUB001

Red Hat

Red Hat Linux V7.0 Standard Edition	$75	SWRED000
Red Hat Linux V7.0 Deluxe Workstation	$165	SWRED001
Red Hat Linux V7.0 Professional Server	$355	SWRED002

Microsoft Operating Systems

MS Windows 2000 Professional - Retail	$575	SWMST088
Microsoft Windows 2000 Pro (f. Win 95/8)	$445	SWMST089
Microsoft Windows 2000 Pro (NT Upgrade)	$245	SWMST090
Microsoft Windows 2000 Pro Server 5 Cli	$1,985	SWMST091
Microsoft Win 2000 Pro Srv 5 Cli Upgrade	$975	SWMST092
Windows 2000 Small Business Server 5 Client	$2,999	SWMST112
Windows 2000 Small Business Server 5 Client U/G	$1,869	SWMST113
Windows 2000 Back Office Server 5 Client	$8,069	SWMST114
Windows 2000 Back Office Server 5 Client U/G	$4,029	SWMST115
Windows 2000 Server 10 Client	$2,349	SWMST116
Windows 2000 Server 25 Client	$3,449	SWMST117
Windows 2000 Server 25 Client Upgrade	$1,635	SWMST118
Windows 2000 Server 10 Client Upgrade	$1,135	SWMST119
Windows 2000 5 Client Access Lisence	$369	SWMST120
Windows 2000 20 Client Access Lisence	$1,469	SWMST121
Microsoft Windows ME Retail New User	$349	SWMST109
Microsoft Windows ME Promo U/G 98	$95	SWMST110
Microsoft Windows ME upg 95	$185	SWMST105

Microsoft Office Applications

MS OFFICE 2000 STD	$969	SWMST076
MS OFFICE 2000 STD UPG	$525	SWMST077
MS OFFICE 2000 PRO	$1,165	SWMST078
MS OFFICE 2000 PRO UPG	$675	SWMST079
MS OFFICE 2000 SBE	$965	SWMST080
MS OFFICE 2000 PREMIUM NEW	$1,555	SWMST081
MS OFFICE 2000 PREMIUM CVP	$795	SWMST082
Microsoft Office 2000 Value Pack	$619	SWMST111



Adelong Computers

Sales Hotline 02 8344 3190
RESELLER ENQUIRIES WELCOME
*Please read our Terms and Conditions

HEAD OFFICE & SERVICE
54 Rosebery Avenue
Rosebery NSW 2018
Ph: (02) 8344 3188
Fax: (02) 9697 9777

SYDNEY CITY STORE
127 York Street
Sydney NSW 2000
Ph: (02) 9267 5272
Fax: (02) 9267 5042

INTERNET WEB SITE:
http://www.adelong.com.au
email: info@adelong.com.au

EXTERNAL IDE CD-ROM CASE



It has never been easier to add a CD-ROM to your PC. With the Portable CD-ROM, you are only one cable away from numerous CD titles and flexibility. Connects to your Windows or DOS PC via the parallel port (LPT).A printer passthrough interface is also included so that your printer can work simultaneously with your CD-ROM.

$130 CAADE008

EXTERNAL SCSI CD-ROM CASE

Use your Internal SCSI CD-ROM or drives as a portable & removable device with the External SCSI
CD-ROM Case. For both MACs & PCs the External SCSI Case comes with a SCSI ID selector so that changing SCSI IDs is as easy as clicking a switch.



CAADE007	SCSI I Centronics Case	$135
CAADE015	SCSI II DB50 Case	$150
CAADE016	SCSI III DB68 Case	$185

USB Link

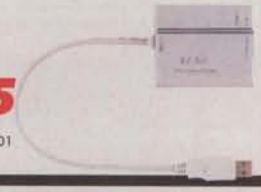
Win 95B, 98 Peer to peer network cable for USB capable desktop or laptop computers. Supported under Windows 95 rev. B and Windows 98, this cable enables files to be transferred between machines.



$59 NWKOU000

USB to 10Base Ethernet Adaptor

Win 95, 98 Join your USB enabled PC to an Ethernet network. Simply connect this adaptor between your PC and the network connection, setup the Windows networking software. Supports 10Mbit/sec transfer rate via an RJ-45 link.



$95 NWKOU001

USB to Printer Cable

Win 95B, 98 Add parallel port devices to your USB capable PC. Run standard printers using a fast and simple connection system. Supports standard, ECP and EPP parallel port modes.



$50 CBKOU000

Ethernet Transceiver

Connects sAUI-IS to Ethernet 10 Base 5, 10 Base T. (RJ45)



$55 NWGEN011

SPECIAL
CS-102 AT Switch
Connect 2 Computers to 1 Monitor
$195 DSADE030

CPU Switch Cable Set

Each cable set connects to one computer.

Model	Price	Model	Price	Model	Price
3M AT Cable Set CS/122/114	$29 CBGEN098	1.8M PS/2 Cable Set CS122/114/138	$25 CBGEN164	3M AT Cable Set CS1008/1016 Audio	$29 CBGEN169
3M PS/2 Cable Set CS/122/114/138	$29 CBGEN099	10M PS/2 Console Extension M/F	$55 CBGEN166	5M PS/2 Cable Set CS1008/1016 Audio	$45 CBGEN170
3M AT Cable Set CS128	$35 CBGEN127	3M PS/2 Cable Set CS 1008/1016 Audio	$35 CBGEN168	5M AT Cable Set CS1008/1016 Audio	$45 CBGEN171
3M PS/2 Cable Set CS128	$35 CBGEN128				

CPU Switches

Never again will you need multiply monitors, keyboards and pointing devices with the range of CPU Switching devices. A single keyboard, mouse and monitor can control up to 8 computers simultaneously without any cable changes. These CPU Switches are digital and require only the push of a button. Excellent for network administrators or anyone who wishes to control 2 or more computers hassle free!

Features: - Supports Mouse/KB emulation for automatic bootup - Supports VGA, SVGA & Multisync monitors - LED's give current status - Easy to install & use

CS-128

AT & PS/2

• 8 Port Switch Box



Item Code	Description	Price
CBGEN127	AT CABLE SET for CS-128	$35
CBGEN128	PS/2 CABLE SET FOR CS-128	$35

$645 DSADE036

CS-138

Control up to 8 PCs with the CS-138.

- VGA Bandwidth of 180Mhz
- VGA Resolution of 1600x1200 @60Hz

Rack mountable PS2 interface



$725 DSADE041

CS-122

Switch between 2 PCs.

Features:

- VGA Bandwidth of 180Hz
- VGA resolution of 1600x1200 @60Hz



$299 DSADE037

CS-114

Control up to 4 PCs with the CS-114.

- VGA Bandwidth of 100Mhz
- VGA Resolution of 1024x768 @80Hz
- Support intellimouse wheel



$379 DSADE038

VS-138

8 Port Video Splitter
1600 x 1200@60Hz

$225 DSADE001



VS-134

4 Port Video Splitter
1600 x 1200@70Hz

$195 DSADE002



VS-132

2 Port Video Splitter
1920 x 1400@80Hz



$99 DSADE048

CS-12c

• 2 Port Mini KVM Switch Box

NEW



$195 DSADE054

CS-14c

• 4 Port Mini KVM Switch Box

NEW



$275 DSADE053

Sales Staff are Available (est)
9am-6pm Monday to Friday,
10am-4pm Saturday
Sales Hotline 02 8344 3190

Technical Support
(5 Days a week 9am-5.30pm)
Phone (02) 8344 3160

Sales Hotline 02 8344 3190



Adelong Computers

OUR FREE ADVICE CAN SAVE YOU A SMALL FORTUNE!

Adelong makes it so easy to purchase. Simply,

Phone: 02 8344 3190 Email: sales@adelong.com.au
Fax: 02 9697 9777 Web: www.adelong.com.au

Adelong Computers Store locations

ADELONG australia

CITY STORE

127 York Street
Sydney NSW 2000

Ph: (02) 9267 5272
Fax: (02) 9267 5042



HEAD OFFICE & SHOWROOM

54 Rosebery Avenue
Rosebery NSW 2018

Ph: (02) 8344 3188
Fax: (02) 9697 9777



Customer Service

Sales, warranty and general enquires: Please contact our Sales Hotline on 02 8344 3190 or e-mail: info@adelong.com.au. Please quote any relevant order numbers.

Technical support enquires: Please contact 02 8344 3160.

3-Year On-Site Warranty: Please call Warranty Assistance Australia on 1800 623 394 if you have our 3-year on-site warranty and are experiencing hardware problems.

Free Delivery in Sydney*

*APPLICABLE ONLY TO ORDERS OVER $500 AND UNDER 2KGS

SYDNEY METRO, $7.70 (20KG LIMIT)
All Other Areas; 1Kg* $8.50*, 3Kg* $9.00*, 5Kg* $15.00*

*Prices are calculated on both physical and volumetric weight

Please Call For Rates Outside Metro Ares

OUR AVERAGE DELIVERY TIMES ARE BETWEEN 1-2 WORKING DAYS FOR REGULAR ITEMS. PLEASE ALLOW 3-5 WORKING DAYS FOR SYSTEM ORDERS. DUE TO THE REMOTENESS OF CERTAIN PARTS OF W.A., N.T., TAS AND S.A., DELIVERY TO THESE AREAS MAY TAKE LONGER.

Ansett Air Freight Enquires: 132 767

DIRECT DEPOSIT

ANZ BANK CNR YORK
& MARKET ST SYDNEY NSW 2000
BSB 012172 A/C 2599 49 784
ADELONG COMPUTERS
PLEASE FAX DEPOSIT RECEIPT ASAP
AFTER TRANSACTION

If paying by cheque please include your drivers licence details

Please fax or mail this form back to Adelong Computers
54 Rosebery Avenue, Rosebery NSW 2018. OR Fax: (02) 9697 9777

BVQI Q4 ISO 9002

Name/Company: _____

Address: _____ Postcode: _____

Telephone Required: () _____ Fax: () _____

Code	Description	Qty	Price
		Total	

Payment by: Cheque ☐ Mastercard ☐ Bankcard ☐ Visa ☐ Amex ☐

Cardholder's Name: _____

Card No: ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ Exp ☐☐/☐☐

Signature: _____

Billing Address: _____

We are unable to deliver to PO BOX for insurance reasons. Please specify your billing Address.

Terms & Conditions

All orders are subject to our terms and conditions of sale. Although we take every reasonable precaution, due to the volume and diversity of the products that we carry, we do not accept liability for any errors in pricing or descriptions. Due to the nature of this catalogue, pricing and stock availability is subject to change at any time without notice. All pricing listed excludes sales tax, unless otherwise stated. Delivery is in addition to listed prices, unless otherwise stated. Please note that pictures and illustrations are for display purposes only and that the final product may vary. All products, brand names, trademarks and registered trademarks are owned by their respective companies.

ORDERING & PAYMENT: We accept payment by Bankcard, Mastercard, Visa, Amex and Eftpos. All company/personal cheques and direct deposits are subject to seven working days clearance. Goods ordered by fax or post will be charged at the current price on the day of receipt. Orders can be made by phone, fax, by visiting one of our showrooms or via our web site. Deposits are non refundable.

CREDIT ACCOUNTS: Accounts may be opened for Govt. Depts, Education and selected incorporated businesses, subject to status. Credit account orders are only accepted on official stationary by fax or post. We reserve the right to withdraw credit facilities.

WARRANTY AND RETURNS: All computer systems come with a seven day customer satisfaction guarantee, of which shipping charges to and from the customer are not refundable. Orders are refundable, subject to final inspection of goods by Adelong Computers. Products will only be accepted back in original condition. Any product sent back to Adelong after the 7 day money back guarantee will be subjected to a 15-20% re stocking fee based on the condition of the product.

Adelong will not accept any courier charges for return goods. Carriage for warranty repairs must be paid for by the customer. A returns authorisation number (RAN) must be obtained before the return of any product. A returns number is valid for 14 days only. Failure to display the RA number will result in the return being refused.

We reserve the right to declare that our warranty on PC's and Parts overrides all other warranties that might be stated by the manufacturers.

Adelong Computers

Groovy, baby

No One Lives Forever

Cast yourself as a foxy female spy fighting Cold War criminals.







First person shooters (and computer games in general) have come a long way since the days of id Software's Castle Wolfenstein. Increasing levels of sophistication and design aesthetics have delivered new levels of depth and immersion to gamers.

Almost three years ago, the first truly revolutionary FPS, Half-Life, was released. Its slick integration of scripted events, cutting-edge technology and good old FPS action made it an instant classic. Half-Life is still going strong today, thanks to an amazing array of multiplayer modifications; the Counter-Strike modification is the most frequently played game of its kind on the Net. No One Lives Forever is the latest release from Monolith, the company behind the much-touted LithTech engine. In the tradition of Half-Life and its brethren, this is another highly polished game.

You play Cate Archer, a fiery young Scottish lass and cat burglar turned spy, working for British Intelligence. The action takes place in the heyday of international espionage: the Cold War during the 1960s. The plot is exactly what you'd expect from a spy thriller. An international criminal org-anisation has been killing off all your government's secret agents. Due to the acute shortage of staff caused by all these dead agents, it's up to you, the novice, to stop the killings and trace the murders back to their source. Expensive planes, jetsetting all over the world, classy bars, international corporations and exciting action sequences make the perfect recipe for great high jinks.

The level design in No One Lives Forever is topnotch. Your missions take you through a variety of environments, from the standard enemy bases to sunken freighters, complete with lethal sharks. There are even a few novel and groundbreaking elements, such as a skydiving level. It's quite a hoot to watch Cate plummet from a plane without a parachute, frantically attempting to catch up with an enemy henchman below while shooting at machine-gun wielding baddies diving from above.

In the end, it's the little things that make No One Lives Forever so great to play. For example, unlike most other FPS games (notably Golden Eye on the N64), if you shoot out the security cameras, you set off an alarm. It's also unwise to shoot an enemy where their body might fall in front of a camera as this also triggers an alarm.

Monolith has borrowed a little from Looking Glass Technologies' Thief series, and in many ways No One Lives Forever plays like Thief with guns. The game starts like a standard FPS, but as you progress you reach levels where you need to rely more on stealth. It's often vital to sneak from place to place, taking out guards silently so as not to alert their comrades.

There are also some great comic exchanges between enemies, which lighten the mood of the game and give it more of an *Austin Powers* feel. There is an overall tongue-in-cheek feel and the designers have gone to great lengths to keep the dialogue cutting and witty.

Enemy AI is about average, and the death animations are quite cool. Shoot a guy standing at a second-storey balcony and he flails over it and onto the floor below. Or if you get an enemy near some steps, he'll fall over backwards and tumble down them. It's touches like these that provide that extra bit of realism.

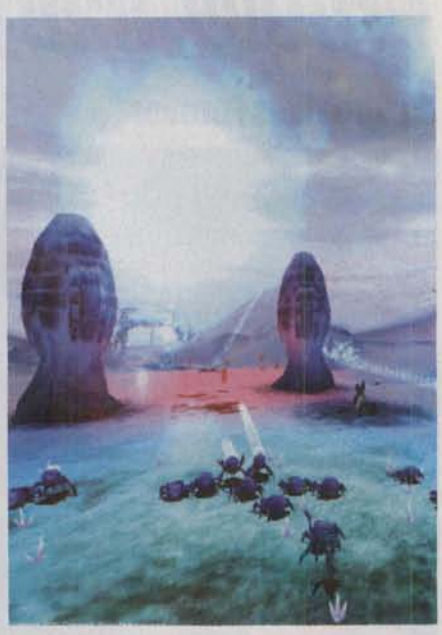
No One Lives Forever is a potent mix of pop culture, '60s retro stylings and fast-paced FPS action. It picks up where Half-Life left off, and it is at least its equal, if not slightly better. The overall package is nicely put together, exquisitely blending gameplay and storytelling. It's up there with other classics from its genre and is undeniably the best FPS that *APC* has seen for quite some time.

Daniel Gardiner

Contact Electronic Arts
Phone (02) 9955 7744
Online www.the-operative.com
Price $76.95
Requires Pentium II 300, Windows 95, Windows 2000, 64M RAM
Classification MA(15+)
Rating ▮▮▮▮▮▮▮▮▮▮

Sacrifice





Sacrifice is a new game from Shiny Entertainment, the publishing house that brought you the extremely weird but enjoyable Earthworm Jim games, and the even stranger and more enjoyable Messiah. It was a good bet that Sacrifice would live up to the hype and expectations set by the previous titles.



Sacrifice is a third person, real time strategy game (RTS), set on a world ruled by five gods. You play a fledgling wizard from another dimension. The gods want to make use of you in their power struggles; you must decide which one you want to align yourself with. As the game progresses and the infighting between the gods grows more intense, each tries to win you over to their way of thinking.

Each level starts with you and your god's altar somewhere on a vast map. Your powers as a wizard come from your god, who is linked to you by the altar. Playing the game requires cunning; to win, you need to desecrate the opponent wizard's altar, but to do that you must leave yours unguarded. The more tasks you carry out for the god you've aligned yourself with, the more powerful the spells you receive as your reward.

Your power to cast spells comes from your altar or the mana fountains that are scattered about the landscape. Opponents' mana fountains can be attacked and taken over, but so can yours.

Sacrifice is like Command & Conquer from a third-person perspective. Many RTS conventions have been adapted for the game, such as clicking and dragging to select multiple units, and the ability to create many groups with the Ctrl-number hotkey. You don't spend much time constructing buildings; the main focus is on creating creatures to fight for you.

Souls are the currency of Sacrifice; to create a creature you need to use a soul, but more advanced beasts may require up to five souls each.

When a creature dies on the battlefield, its soul (or souls) hovers nearby for collection. Friendly souls can be harvested by running near them, but enemy souls are heretical and must be sacrificed on your god's altar before they can be used. Part of the game's strategy involves grabbing back your own souls and the heretic souls before the enemy can get them. The more souls you gather, the more powerful an army you can create. If you die in battle, you become a spirit capable of commanding troops, but you can't gather souls or cast spells. To return to battle you need to get back to a mana fountain or altar to regenerate your health and mana. When you locate the enemy altar, you must sacrifice one of your creatures on it to desecrate the altar. Desecrating an enemy altar severs the wizard's link to their god, and you win the level.

The gameplay is fun and it can be quite frenetic, but after a while it becomes repetitive. The level designs are well thought out, and sometimes require a lot of exploration before your goals are clear. Battles become extremely intense, and at higher levels the destructive power of the wizard spells are awesome. Some spells damage and totally change the landscape to great effect. The graphics, voice acting and audio are excellent, and there are many different plots and subplots as the game develops.

Darren Ellis

Contact Interplay
Phone (02) 9959 1074
Online www.interplay.com
Price $87.95
Requires Pentium II 300, Windows 95, Windows 2000, 64M RAM
Classification M(15+)
Rating ▮▮▮▮▮▮▮▮▮▯▯

Battle Isle: The Androsia War



Turn-based strategy games have been few and far between lately. This is undoubtedly because the generation of gamers raised on a staple diet of real time strategy (RTS) and first person shooter games find them too slow.

While strategy fans revel in the opportunity to carefully plan and execute each manoeuvre, many gamers find themselves waiting impatiently for their turn. Battle Isle: The Androsia War promises a revolutionary blend of turn-based strategy and RTS games — could this be the middle ground fans of both genre have been waiting for?

The turn-based component of Battle Isle is fairly standard. You are given a mission and you have a series of turns to manoeuvre your units into a position to defeat the enemy or accomplish your set goals. Like all turn-based strategy games, once your time period has expired you must wait for your opponent to have their turn before you can move your own units again.

Battle Isle also has a real time component to help relieve the boredom of this period while you wait your turn. This consists of running your 'economy', which is found on a separate island. You must mine for minerals, build units to ship over to the battlefield, and complete research and development. This is quite an interesting concept. It doesn't completely alleviate the problems of the waiting period, but it goes some way to providing a solution.

Battle Isle is based in a 3D world, which is quite unusual for a turn-based game. The action can be viewed from any position, and the graphics are superb.

Sadly though, Battle Isle also has its share of bugs; the usually functional camera sometimes skips and jumps erratically, and the interface makes precise control difficult.

Battle Isle isn't a bad game. Turn-based strategy fanatics should love the added real time component and will be amazed by the incredible graphics. However, RTS fans will be less impressed and are advised to steer well clear.

Alan Crawford

Contact OziSoft
Phone (02) 8303 6800
Online www.battleisle.com
Price $79.95
Requires Pentium II 300, Windows 95, Windows 2000, 64M RAM
Classification G(8+)
Rating ▮▮▮▮▮▮▮▮▮▯

Sheep

If you happened to grow up in the country, you'd know that sheepdog trials are considered a big deal, worthy of a TV broadcast. If you're now a city dweller and still lust after the simple pleasures of ordering woolly mammals around, then Sheep could be for you — as long as you're blessed with an abundance of patience.

The premise (a thinly veiled plagiarism from Douglas Adams) is that sheep are apparently highly evolved and incredibly intelligent aliens. They landed on earth, stayed and evolved — downwards. Your mission, as one of four herders, is to bring them to their alien brethren on top of Mt Mouflon before the evil Mr Pear makes mutton out of them.





For graphics, Sheep isn't going to win any awards, but it's cute enough, accompanied by more baaing than should be legally possible.

In terms of gameplay, Sheep is best described as an arcade-style version of Lemmings — you guide your sheep through various wacky and comical danger zones to an exit point at the end of the level. Just as in Lemmings, you must rescue a certain number of sheep to progress to the next level. Unlike lemmings, sheep are very unpredictable. There are four different breeds, each with a different level of stupidity. All the control is done through your herder, which makes gameplay a lot more arcade-like and immediate. It can be tricky to plan how you're going to get past the next obstacle when you're spending all your time just trying to stop the sheep wandering into the field of shark-infested corn. In the later levels this can be frustrating — don't say we didn't warn you.

Alex Kidman

Contact Electronic Arts
Phone (02) 9955 7744
Online www.saveoursheep.com
Price $54.95
Requires Pentium 200, Windows 95, 32M RAM
Classification G
Rating ▮▮▮▮▮▮▮▮▯▯

Hitman Codename 47

Hitman Codename 47 allows you to enter the world of assassins, where tactical thinking and stealth are imperative to the success of the mission. Your role in this shadowy world is to take care of unpleasant tasks for wealthy clients, the kind of tasks no-one else wants to touch.

For their first title, IO-Interactive have gone to great lengths to emulate the gritty feel of the 'underworld' in which hitmen dwell. Developers conferred with army instructors and snipers to gain insider information about how real hitmen react to and work with their surrounding environments. Different places throughout the title were constructed using photos or real-life locations. For example, a hotel in Budapest featured in the game was closely modelled on its real-life counterpart. Weapons and other gadgets were chosen for their coolness and they are divided into categories such as 'small and quiet', or 'big and noisy'.



The game is a series of general operations, and small sublevels break up the larger missions. Between each mission, you are briefed on your objectives for the next through a small laptop computer interface. It also provides intelligence data for each mission, and allows you to request weapons and other implements needed for the task ahead.

Players are constantly reminded that this isn't a straightforward fragfest; different missions require different approaches. Casual strolling around may work for some of the urban levels, but try that in some of the later missions and you'll end up watching your bullet-ridden carcass fall to the ground time and again.

This game is a polished piece of work. The detail in the environments and locations is outstanding. The musical score is also great, in a dark and brooding way, giving the game a very sinister feel. The gameplay emphasises strategic elements, which makes a refreshing change. In short, this game falls into that illustrious must-buy category.

Ryan Shaw

Contact OziSoft
Phone (02) 8303 6800
Online www.hitman.dk
Price $98.95
Requires Pentium II 300, Windows 95, 64M RAM
Classification MA(15+)
Rating ▮▮▮▮▮▮▮▮▮▮

Quake III: Team Arena

In late 1999, the gaming gods at id Software took a revolutionary step: they released a first person shooter (FPS) primarily designed for multiple players. About the same time, Epic released Unreal Tournament, another great multiplayer FPS. Both games have since been going head to head with each other. New modifications, upgrades and extras are continually coming out for each.



Team Arena is the first official add-on from id, which means you need a full version of Quake III Arena to use it. It's a sizeable upgrade of the team-based section of Quake III Arena, and it delivers a much-needed boost for a game that was focused on the deathmatch. There's a pile of new maps, including new outdoor levels that look great and add interesting new gameplay elements.

Beyond the new maps, id have concentrated on finetuning and tailoring the team aspects of gameplay. Most of the new types are variants of Capture the Flag; for example, in One Flag CTF both teams must attempt to retrieve a single flag from the middle of the map and return it to their base to score points. Another type is Harvester, where you kill enemy team members, collect their skulls and take them to the enemy base to score.

A great edge is also added by the inclusion of four different types of powerups that give you regenerating health or ammo, double damage, or speed boosting, but each powerup can only be used by one player at a time.

Team Arena is good. It's a damn fine addition to an awesome game, but is it worth the price? For half its current retail price, it would be a sure-fire winner. As it is, only the most adamant Quake fanatics are going to want to fork out that much money for something that is really just an add-on. The result will be fewer local servers and fewer players, which is a shame considering how much fun the game is. Until the price drops, this one is strictly for hardcore fans.

Daniel Gardiner

Contact Activision
Phone (02) 9869 0955
Online www.quake3arena.com
Price $89.95
Requires Pentium II 300, Windows 95, Windows NT, 64M RAM
Classification MA(15+)
Rating ▮▮▮▮▮▮▮▮▮▮

Resident Evil 3: Nemesis

There's a marketing maxim that if something is successful, keep on doing it until no-one buys it anymore. Capcom must subscribe to that theory; this is the third game (or the fourth, depending on how you count them) in the Resident Evil series.

Resident Evil 3 puts you up against the Nemesis of the title. No more waiting for the big bad guy at the end of the game; in Nemesis he's on your case within minutes of the game starting. Alongside him are a whole host of creepy critters, and more zombies than a George Romero convention.

Like its predecessors, Resident Evil 3 still features some puzzle solving, but it's no longer as prominent. It's been overtaken by a lot more zombie blasting, and a decision-making process that gives you real time choices that affect the plot in some way. This adds to the longevity of the game, and at the same time makes it more appealing to action junkies. Speaking of action junkies, they'll appreciate the add-on game, The Mercenaries, where you have to blast and run your way from one end of Racoon City to the other before a bomb goes off inside you. Messy.

The graphics in Resident Evil 3 look like those in Resident Evil 2 — they looked OK two or three years ago, but are a little dated now. Why Capcom didn't release



the graphically superior Resident Evil: Code Veronica remains a mystery.

Players of the previous titles will find Resident Evil 3 more of the same, tilted strongly towards action over thinking. New players will probably find it a little easier and more immediately engaging than the previous two games.

Alex Kidman

Contact OziSoft
Phone (02) 8303 6800
Online www.capcom.com
Price $87.95
Requires Pentium 200, Windows 95, 48M RAM
Classification MA(15+)
Rating

Gunman Chronicles

Gunman Chronicles is a total conversion of Half-Life, but it's inferior to the original.

It begins with a laborious shuttle ride on a space station, reminiscent of the train ride into the depths of the Black Mesa complex in the beginning of Half-Life. That ride set a brooding atmosphere for what was to come, but the ride at the beginning of Gunman Chronicles just drags on.



As in Half-Life, the writers have tried to give the game an interesting story-line, but they have failed miserably. You play a member of the Gunmen, the future space army corps. Strange, genetically modified creatures are attacking outlying civilisations. Who could be behind this dastardly attack? You don't have to guess.

The first level is the most baffling of all. You land on a planet with heaps of well-armed fellow Gunmen, while your character is outfitted with a knife. It is rewarding when you do collect weapons. Each weapon has multiple firing modes which makes for a more strategic game. Some of the level designs are excellent, but some are just blatant copies of Half-Life. The textures and monsters just look bad. If you're looking for a good FPS, *APC* recommends you look elsewhere.

Darren Ellis

Contact Jack of All Games
Phone (02) 9482 7920
Online www.sierrastudios.com/games/gunman
Price $87.95
Requires Pentium 233, Windows 95, Windows NT, 32M RAM
Classification M(15+)
Rating

Gamespy

● One thing that's all too common in the information age is the rapidity with which high-tech companies go out of business. Sadly, one of the pillars of the online gaming community has succumbed to this trend; Gamecenter.com (part of CNET) was taken offline in early February. In business for four-and-a-half years before its closure, Gamecenter was one of the oldest dedicated gaming sites on the Web. No official reason has been given for the closure yet, but there's speculation



that the diminishing return rates of Internet advertising revenue played a significant role. This combined with the fact that CNET recently purchased ZDNET (as pointed out by gaming veteran Desslock on desslock.gamespot.com) meant that the closure of either Gamespot or Gamecenter was almost inevitable. Some other major gaming sites (and Web sites in general) are also currently struggling to stay afloat, with cost cutting and belt tightening occurring across the board. Stay tuned.

● Sega fans have received another major blow with the recent announcement that the company is winding down its Dreamcast hardware manufacturng to concentrate on creating games and software. In line with this new policy, the *Official Dreamcast Magazine* has also been cancelled, putting the future of the console in even more doubt. Games will continue to come out for the system, but the number and variety is certain to diminish without Sega's official support. Unnamed sources involved in the development of Microsoft's Xbox have revealed that it may be Dreamcast compatible, which should extend the life of the systems's games slightly. There are plans to combine a set-top digital TV box with a Dreamcast, to provide games via digital transmission (which is then saved to a hard disk), rather than in standard CD format. There are also plans to release a number of Dreamcast titles on PlayStation2 and other next generation consoles.



Best ever sports games

Australians love their sport – or at least the TV network programmers think we do. It's only a short hop from sitting on your butt watching sports to sitting on your butt playing virtual sports. APC *guides you to titles worthy of your digital sweat.*

720 Degrees



Skate or Die and Tony Hawk are fine games, but the granddaddy of them all is Atari's 720 Degrees. The arcade version has a really neat trackball, while home conversions rely on users twiddling joysticks and keyboards. Working against the clock, you need money to get skate tickets, which allows you to enter the various skate parks to earn more money — and so on it goes. Failure results in a swarm of killer bees coming to get you. No, seriously, killer bees.

FIFA series



Football games come and go — *APC* staffers are still fond of Kick Off and Sensible Soccer, not to mention the aging C64 classic International Soccer. However, in recent years there's been little to touch EA's FIFA series. Like other EA series, they only update the graphics and controls every four years or so. In the intervening years, 'new' versions add new players and teams, but not much else. However, when you have gameplay as polished as this, little more is necessary.

California Games



Like, totally gnarly game, dude. You, like, control this dude, see, who has this totally bodacious set of tasks before him. You start skatin', or, if you're a lameoid, smackin' your head on the inside of the half pipe. Next up, hackysackin' — then surfin' (love that rad shark!), then onto BMX, rollerskatin' and frisbee. Compete with a whole party, dude — up to eight players. This game, like, totally reeks of awesomeness.

2020 Super Baseball



Not really a popular Aussie sport, there's nonetheless been a ton of baseball games on most formats. We like 2020 Super Baseball for the Neo Geo — it's easy to pick up and start playing, it has land mines, robots, buxom female pitchers and the ability to deliberately send a ball speeding at someone's head at 400km/h. The feeling you get when your cybernetically enhanced batter hits the ball 3km clear of the stadium is pure bliss.

NBA Live series



EA must make a good 50% of its revenue from constantly churning out sports games. At least the constant refinement does lead to some top-notch games. However, this wasn't always the case. Early EA basketball games, such as Bulls vs Lakers, were abominable, but once they switched to the NBA Live moniker, things picked up. The PC versions are especially good, with the option to follow the actual NBA league with week-by-week rosters and real game results.

Links series



What can we say about this great golf series that you don't already know? Deskbound males aged between 30 and 60 already know this one inside and out, as countless hours of productive work have already been lost teeing off on the seemingly endless range of Links golf courses. The Links titles have always been the definitive golf games for the PC. It's easy to see why they've been so popular, with their multiple gameplay modes, ever-improving graphics and addictive play.

Athlete Kings



Sega's last two consoles may have sold poorly, but they certainly had some excellent games. Athlete Kings (only available for the Saturn) is one of them. It's basically a refit of Epyx's old Summer Games, but with much smoother controls. It presents challenges across eight different events, using wacky national stereotypes and characters with individually articulated buttocks.

Athlete Kings provides a nice balance between the need to frantically push buttons, and knowing when to push them — the endurance-based 400m and 1500m events are a perfect example of this. Armchair athletes can jump, run and chuck stuff with the best of them. However, *good luck finding a copy.*

Mike Tyson's Punch Out



Boxing has always been a hard sport to do properly in videogame format, and Nintendo came closest with Punch Out, which first appeared 13 years ago. The Mike Tyson thing means that the endgame boss is all but unbeatable. We'll avoid all the optional tasteless jokes — feel free to make up some of your own.

It's a fine game of strategy, cunning, and hitting people in the head until they fall down. It's unfortunate that there's only one pugilist and no multiplayer mode, but it's so easy to pick up, and yet so hard to put down.

After all these years, it still stands out, even against fresher fare such as Ready to Rumble Boxing.

Speedball 2



There have been a few attempts at sci-fi sports extravaganzas, but none come close to Speedball 2. This game features a metal ball, a futuristic arena and rules similar to soccer, but you throw the ball instead of kicking it. Random powerups freeze the opposing team and really spice things up.

The rules don't just encourage you to punch opposing players in the face, they virtually require it. There's even a random bloke in the audience selling ice cream. If that's not sport, we don't want to know what is. Speedball 2 is fast, frantic and, unfortunately, completely out of print.

Madden series



John Madden is a fat, noisy American football commentator — like a Yank version of Daryl Eastlakes. Madden Football is the best gridiron game bar none. Virtually every good feature in any other gridiron game started life in one of the Madden games. Being a US sport, there are more stats than you can poke a stick at; the difference with Madden is that if you play for long enough, you actually start caring about them. Again, this is an EA regular — the game started out as one of the standout early Megadrive games — so you only need to pick up a version every four years or so, unless the rosters matter deeply to you.

Hit for six

Mutant League Football

WWF Smackdown! 2

Virtua Tennis

Tony Hawk's Pro Skater 2

Shane Warne Cricket '99



Like a cricket ball to the groin

Sydney 2000

Bulls vs Lakers

King of Boxers

WCW Thunder

Mutant League Hockey



Sticking point

The most expensive text-editing software in the world can't compete with the simple Post-it note, so why fight it? ***Fiona Angus*** *gets stuck into memo software.*



Illustration by Chris Bray-Cotton

Have you ever spent thousands of dollars on a new PC just to find yourself sticking Post-it notes all over the very piece of equipment that was designed to organise your files and work? Many people would rather drown in a flood of small yellow stickies than use a text editor. Why?

Perhaps it's because the human brain isn't organised like a Microsoft Office document, or even the Windows Notepad. Active minds often have a thousand great ideas emerging at just the wrong moment, and the linear structure of a text editor and the hierarchical file organisation of Windows kill good ideas before they can reach your PC. The medium that most closely resembles human thought processes is the sticky note.

Some software developers have recognised the popularity and versatility of stickies and have designed programs that mimic the functions of Post-it notes on a PC. Apple bowed to the popularity of sticky notes and has built a memo program into the Mac OS. However, Microsoft has continued to restrict Windows users to the clumsy Windows Notepad for simple messages.

Luckily, there are many sticky note programs available for the PC. *APC* has found some cool, free memo programs, so you can transfer all your wayward thoughts onto your PC without losing the spontaneity of paper notes.

Sticky notes programs run in the background with your operating system, and launch automatically when the computer starts up. The notes you create float on your desktop, and can be set to float on top of any running application. The programs automatically save anything you jot down, and you can edit the text at your leisure. Each note has a separate menu that appears when you right-click on the note or the shortcut bar. More sophisticated programs have special menus and note management tools.

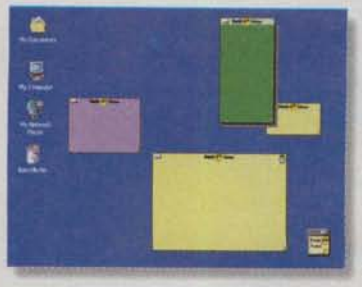
Virtual stickies can do things that paper stickies can't. They come in wide range of colours and can hold large blocks of text. If your screen becomes covered in stickies, you can file, print or recycle them to keep your desktop orderly. Sticky notes can be programmed to expire after a set period, so you never have to throw them away yourself.

Some memo programs allow computers to send notes to each other. This is a polite alternative to leaving little paper notes on a colleague's computer screen. Virtual stickies also have a built-in alarm to remind you when to act on an important message.

Swapping paper stickies for virtual sticky notes helps the environment as well as your work area. So sweep away the chaos on your desk and transfer it to your computer.

3M Post-it Notes Lite 2.1

This is the virtual alternative to the popular paper product. All notes are generated and managed from a central mini-note, and when they are created or deleted, they spin, zoom and fly around the screen. Unlike the paper version, every virtual note has the company logo emblazoned across it. The program also generates an ugly border around each note if your desktop is not set to the default Windows wallpaper. There is also only a handful of colours to choose from.

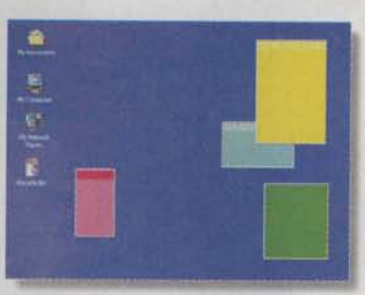


Contact 3M
Online www.3m.com.au

The professional version, has extra features such as printing and sharing notes across a network.

Dema Post It Light 1.5

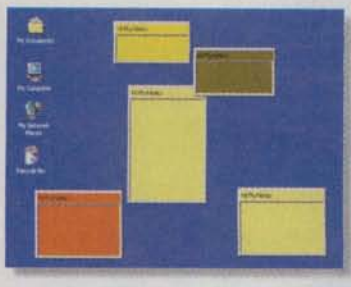
If you can forgive the spelling mistake in the top menu item (Apparence), Dema Post It Light 1.5 is a good all-round stickies program. It allows you to drag and drop text and supports a limited number of image formats. You can develop your own colour scheme, but it's impossible to get rid of the border on each note. The program has a useful menu in the Windows shortcuts bar that allows you to easily create new notes or hide existing notes from view. Some features expire after a month, but the program still automatically saves anything you jot down.



Contact De Software
Online neptune.spaceports.com/~desoft/

NiftyNotes

NiftyNotes doesn't have the ability to drag and drop text, so it's difficult to use if you're not familiar with keyboard shortcuts. The rainbow of colours option is fun to use, but the effect is undermined by the permanent border on each note, which incorporates a large title bar with the program name on it.

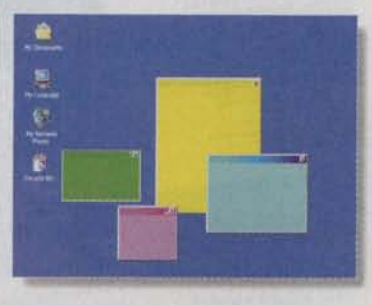


Contact PME Software
Online www.alienalchemy.com

The program doesn't register in the Windows shortcut bar, so it can be difficult to locate notes when other applications are running. NiftyNotes performs basic functions, but it's a very rigid and unattractive program.

Stickies 1.71

Designed for the young and adventurous, Stickies 1.71 incorporates two arcade-style games, a psychedelic colour scheme and some interesting animation. The program's text-editing functions are good and there is a word search and replace option.



Contact Steven De Toni
Online www.geocities.com/SiliconValley/Horizon/2691/files.htm

Stickies is linked to Microsoft OutLook, so you can easily transfer the contents of your notes to email messages. However, the program is rather volatile and is harder to master than its simpler rivals.

Stringy Notes 3.0

If you want extra text-editing options with your stickies, Stringy Notes has a formatting toolbar similar to the Windows Notepad. As well as drag-and-drop editing, you can find and replace text. Each note has a normal Windows border, but if the border is removed, the note is 'stuck' in that position on the screen. Stringy Notes has a central configuration tool that lists all notes and allows you to sort and file them or save them in a special recycle bin.



Contact PiCo
Online www.pico.demon.nl/stringynotes

TurboNote 3.3

If you like sticking Post-it notes on other people's PCs, you can do this across a network with TurboNote. Unlike other sticky notes programs, TurboNote also has a help section to assist with setting up a fully fledged stickies exchange. The only disappointment is the text-editing function, which doesn't allow you to drag and drop text.



Contact TurboPress
Online turbonote.com

TurboNote has a simple and attractive interface which is easy to customise. Each note has its own menu, but there is also a central menu in the Windows shortcut bar and keyboard shortcuts.

PlayStation®2

OFFICIAL AUSTRALIAN MAGAZINE



THE ESSENTIAL PS2 ACCESSORY

PlayStation®2: Games Film Music Life...

ISSUE #02 ON SALE NOW



AUSTRALIA'S ONLY PLAYSTATION®2 DEMO DISC - FREE EVERY ISSUE

Inner workings

Find about about computer logic, communicating in the digital age and the mystery of the human brain.

The Universal Computer

This book is a prehistory of computing, dealing with the development of systems of logic that made the digital computer possible. Covering three centuries of pioneers including Boole, Gödel and Turing, *The Universal Computer* sets these individuals' work against their life and times.

The body of the book is only a little over 200 pages (the extensive notes, references and index add another 50), but it's not a quick read and some sections require serious concentration. It would have helped if Davis had drawn explicit conclusions in the passages dealing with formal logic, rather than leaving the average reader thinking, "So what?"



Don't let that put you off. Even if you struggle through one or two sections, the blend of biographical and technical material is enjoyable and stimulating.

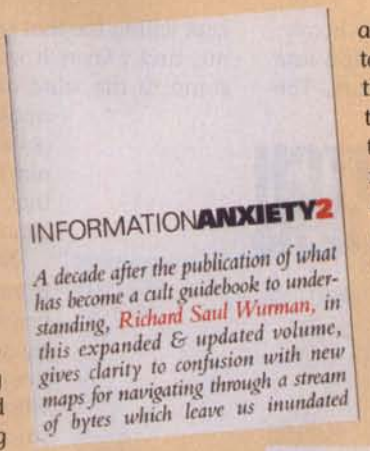
Readers who are not computer scientists will probably have a much better understanding of things such as the nature of a Turing Machine after reading Davis's explanations.

Stephen Withers

Author Martin Davis
Publisher WW Norton
Contact John Wiley and Sons
Phone 1800 777 474
Price $48.30
ISBN 0393047857
Rating ■■■■■■■■■■

InformationAnxiety2

InformationAnxiety was first published in 1989 and attracted a cult following for author Richard Saul Wurman, the person who claims to have invented the term 'information architect'. It was hailed as a profound guidebook to surviving information overload and communicating in the electronic age. A decade later, *InformationAnxiety2* is receiving similar accolades.



In his latest book, Wurman provides more than an antidote to data and information saturation. He teaches you how to communicate in the digital age, both on a personal level and in a business context. The book ranges widely, from a personality analysis of instruction givers and takers, to new media marketing, the structure of conversation, the use of maps as metaphors, the art of learning, and designing your life — all in 295 pages. And therein lies the book's downfall: too much breadth and not enough depth.

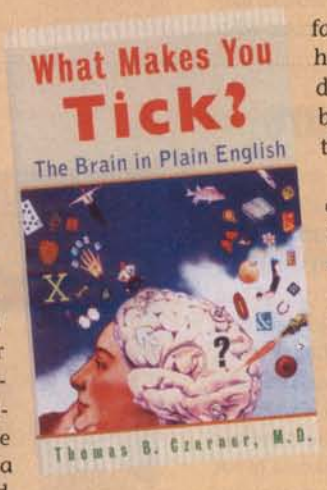
InformationAnxiety's fascinating collection of observations answers many questions and leaves you asking more.

Cathie Kennedy

Author Richard Saul Wurman
Publisher Que
Contact Pearson
Phone (02) 9454 2222
Price $59.95
ISBN 0789724103
Rating ■■■■■■■■■■

What Makes You Tick?

What Makes You Tick? presents a thought-provoking guide to current models of the human brain. Some of the findings may be a little disturbing, even if you're reasonably comfortable with the idea that the self is an artefact of the brain, not an inhabitant of it. For example, an interpretation put on some experimental results is that we don't actively choose a course of action. Instead, we decide not to do many of the possibilities generated by our brains: "Volition may consist merely of stifling inappropriate urges."



Czerner presents various theories on the self — from the self being no more than patterns of electrical activity to the view that consciousness may arise from quantum activity. Whichever theory you favour, it's interesting to see how the successive analogies describing the workings of the brain reflect the technologies that were current at the time.

The book's claim to being a plain English guide is justified. Some specialist vocabulary is inevitable in a technical or scientific book, but terms are introduced gently. This book is sparsely illustrated, but the uncluttered typography is appropriate for serious reading.

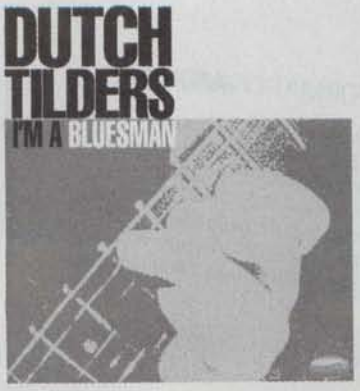
Stephen Withers

Author Thomas Czerner
Publisher John Wiley and Sons
Contact John Wiley and Sons
Phone 1800 777 474
Price $51.90
ISBN 0471371009
Rating ■■■■■■■■■■

Tuning up

Dutch Tilders

Dutch Tilders has one of those heavy, throaty voices that brings to mind late nights in smoky Deep South bars. The accent of this legendary Australian bluesman is hard to pick, but he sounds vaguely American. Dutch was born in the Netherlands, and when quizzed by *APC* about his accent, he recalled that he learnt to speak English from an Irishman, a Welshman and a Scotsman. Perhaps this explains his unique sound.



When he was a boy of about 12 in the Netherlands, Dutch first heard the distinctive sounds of Big Bill Broonzy, Blind Black and Lightning Hopkins. He became hooked on the blues in a way that would shape his life. Dutch drew his style from the emerging fusion of blues and rock. His guitar riffs are at times gentle and moving, at others slick and gutsy. Dutch's lyrics are inspired by his life, and they contain something of the Aussie larrikin. "I spent 20 years with a woman who kept telling me that smoking was bad for me, and I knew it was because I had to stand in the wind and the rain just to smoke and I could have gotten a cold or pneumonia. What came out of that was a song called 'Smoking Woman'."

Now in his 60s, Dutch is busy headlining blues bashes around the country and the world. "I love live performance; that's what I get off on," he said. *I'm a Bluesman*, Dutch's latest album, is a collection of some of his more recent live recordings. As for his future, he hopes to out-live all the blokes at the local pub so he can cheat them out of going to his funeral. In the meantime, he'll be doing more of what he loves — playing the blues.

Nola Camden

Track Going Back to the City
Online www.home.aone.net.au/studio52

Advent Sleep

'Look Away My Love' music video

Advent Sleep are an unashamedly Goth band from the US. The videoclip for 'Look Away My Love' is a monochrome number, and the track has a retro-gothic feel.



This month on CD 2, *APC* presents over 80 tracks provided by ChaosMusic, Downloadmusic.com.au and MP3.com.au. Check them out.

Ribbed for Pleasure

Performing live has never been a problem for Ribbed for Pleasure; the band was born in a hectic gig at Mudfest '99, an annual music festival held in far north Queensland. Rob Staines (lead singer) explains, "The night before we were scheduled to perform, some hippy spiked our drinks, which meant no sleep. Come 10 o'clock we had a drunk drummer and our singer had somehow found this long-haired lout who he'd invited to sing with us. This turned out to be a great move. We improvised for an hour straight, and by the end, we had the stunned audience cheering. We kept the new singer, kicked the old one out, and the rest is history." The band is now composed of singer Rob Staines, guitarist Jim Bryce, bassist Ryan Wilson and drummer Dal Smart.



Ribbed for Pleasure are currently working on tracks for their debut album *Strange Plane in Limbo*, which is due out later this year and will be available from Pandamonium Records (www.pandamonium.com.au). The band members are slowly acclimatising themselves to working in the studio. "We have to approach live performance and studio recording from different angles. Live performance is our strong point, so we initially found it difficult to bring the power of our stage show across in the studio. But we are learning how to get that happening. By the time our debut is finished, we'll know precisely what we're doing," Rob said.

Originally from Cairns, the band is planning to move to Melbourne or Brisbane to get more exposure, something that is hard to acquire in far north Queensland. As for the Web, "We love the way the Internet is helping us get noticed. If it wasn't for that, we'd still be just another unknown band from another little town."

Daniel Gardiner

Track Time
Online www.mp3.com.au/ribbedforpleasure

Check out this cross-section of Australian music; discover the blues, get funky and rock on.

Hot Rubber Glove



Hailing from Cairns, Hot Rubber Glove are a dub/funk outfit with some seriously supple grooves. The band has six regular members, and a number of other musicians chip in for certain tracks and live performances. The band's free-form approach is evident in the groovy, sinuous style of their music. Vocalist Morgyn Quinn (aka Mig-Lu) said, "In the beginning, it was Kaz and myself who wrote the songs . . . now everybody's writing and coming up with some interesting fusion — ska, latin, acid jazz and cyberistic forces are now morphing our funk/dub style."

The band's music incorporates live elements, along with samples from Mig-Lu's personal interviews with Caribbean dub artists. "Most of our music is organically produced, but with all the newfangled gadgets available these days, it's fun to dabble in electronica," Mig-Lu said.

The band are well known for their support of a vast number of social causes, and their songs often reflect this. "Human behaviour never ceases to be an inspiration. Greedy pigs, bigots and politician-wankers can bring on the best rhymes. Lyrically, we're about taking care of the planet, each other, decriminialising pot and encouraging hemp production, expanding our telekinetic powers, and just gettin' down and makin' love," Mig-Lu said.

They are also passionate about performing live. "You just can't beat a good gig. In Cairns, it's impossible to make enough money playing original tunes, so we all have day jobs (. . . or are unemployable). What little loot we make buys studio time. In north Queensland, where pub rock will never die, we have to think about a future on the airwaves or Internet sales, so it's imperative for us to record as often as we can," Mig-Lu said. Their new album, *Conscious Fusion*, is available from Pandamonium Records at www.pandamonium.com.au.

Daniel Gardiner

Tracks Babylon Mash Up
Conscious Fusion
Sweet Word
Soul Level
System (Shake That)
Uptight Dub
Online mp3.com/hotrubberglove

Cloud 9

Successful businessmen by day and energetic players of "heavy pop" by night, Cloud 9 claim there is a huge difference between their daytime and onstage images. "But that works for most of us," drummer Stuart Mills said. "It's great to get away from the daytime me."

According to Mills, the idea for the band came "over about six pints after work one day. We were discussing music and realised that between us we could actually get a group together. We had to make one guitarist a bassist, but that worked great and so we were set."

Since they began playing the Sydney pub circuit in early 1999, Cloud 9 have built a loyal following for their high energy gigs. Their sets are usually peppered with lively covers of songs by groups such as The Clash, The Jam and Stray Cats. Mills describes Cloud 9's songs as "catchy, but also carrying the energy of heavier material without being over the top. The technology of the keyboards and guitar effects is becoming more pervasive in the music and is opening up creative areas for new sounds."



Developments in technology have really boosted Cloud 9. "We can mix, digitally master and print our own CDs cheaply. This means we can make a quality CD without the need for a record company," Mills said, referring to their new EP *All Tip No Iceberg*. "We have our songs on Napster in the UK and use it to send MP3 files to our friends. We see it as a fantastic, low-cost medium for distributing our music, which we couldn't possibly access in the partisan Australian pop-rock market."

Nola Camden

Tracks City in the Sun
Living in the City
Online www.users.bigpond.com/msn/stumsy

All these tracks and the videoclip featured in Random Notes can be found on CD 1 of this month's cover CD pack, along with profiles of the artists.

On the road

Where do you want to go today? This month, APC tours a variety of local and international travel sites, so strap on your backpack, lace up your walking shoes and start planning your escape.

Australian Tourism Net

This site looks good, but it only provides a few links to other Web sites for accommodation, car rental and so on. Some of the smaller areas listed have no entries at all. There are no links to any major Australian tourism businesses such as airlines, hotel chains or tour organisers. The only entry under entertainment for the whole of Australia is one lady who refers to herself as an "escort". This site is an extremely limited source of Australian tourism information.



Online www.atn.com.au
Rating ▮▮▮▮▮▯▯▯▯▯

Megan Smith

Discover Australia

This is the official site of the Australian Tourism Commission and it's the most useful Australian travel site I've seen. It has lengthy descriptions in rather small print, but provides more practical options, useful tips and information, maps and accommodation than you'll ever need. It includes suggested itineraries, an adventure and activity guide, an events list and an extremely thorough travel directory. This is a must-see for all tourists — international and Australian.



Online www.aussie.net.au
Rating ▮▮▮▮▮▮▮▮▮▮

Megan Smith

The Final Word

This is a reasonably inclusive site. You can do some research to decide where you want to go, then make bookings and pay for accommodation, travel and other activities. The site is well designed if not particularly stunning; just choose the category that interests you and narrow the options according to the area you're visiting. You can plan driving holidays, browse books and maps for sale, and follow the adventures of correspondent 'Kate'. The range of accessible services is far from exhaustive, but the site is worth a look.



Online www.finalword.com
Rating ▮▮▮▮▮▮▯▯▯▯

Zoe Hungerford

Fodor's

This site contains information for travellers of all kinds. Business travellers can find advice on etiquette in exotic countries, and read about a range of business-related travel topics. Family travellers can read about travelling with children and choosing interesting child-friendly destinations on a budget. There are news items on events that may affect travel, such as the earthquake in India, and feature articles on different destinations. The restaurant reviews are good; you can even contribute your own review if you've been there.



Online www.fodors.com
Rating ▮▮▮▮▮▮▮▯▯▯

Suzanne Fraser

Getaway

Web companion to the *Getaway* TV show, this site has the latest features from the show and an archive of previous stories. There's an online shop selling travel books and equipment, and links to sites on just about every aspect of travel. Special holiday packages are available and members of the free travel club are emailed special deals weekly. There's practical information along with entertainment links and online travel chat, and you can even send an e-postcard or put your travel pics on the Web.



Online ninemsn.com.au/getaway
Rating ▮▮▮▮▮▮▮▮▯▯

Gail Lipscombe

House Sit

Does trying to find someone to take care of your pets and garden take all the fun (and funds) out of going on holidays? This site could be your salvation. Using the online database, you can pick just the right person to look after home and hearth while you're off working on your tan. You can then arrange a meeting to discuss what each of you expects from the arrangement. There are also links to the international site. Why not register as a sitter yourself and make your next holiday even cheaper?



Online www.housesit.directoryoz.com.au
Rating ▮▮▮▮▮▮▮▮▯▯

Gail Lipscombe

Lonely Planet

This site received a glowing review in *APC*'s February 2000 issue (see page 166), and it's still great. Aimed at young travellers and backpackers, it's savvy and intelligent. Unfortunately, the same can't be said for some of the readers posting to the site's bulletin board. Questions like "How did Australia come to be known as Oz?" and "Which Australian city has the best-looking blokes?" make you wonder. The site offers CitySync if you're travelling with a handheld, and a text-only version for those in a hurry. If you're after informed and entertaining travel information, drop into Lonely Planet.



Online www.lonelyplanet.com.au
Rating ■■■■■■■■■■

Suzanne Fraser

NRMA Travel and Maps

This Web site does the NRMA credit. It provides information about motoring in Australia and overseas, outlines member benefits, and also has plenty of maps of Australia. You can access NRMA Traveland for bookings and travel insurance policies. The pages are clear and easy to navigate. Its Australian accommodation guide is not yet complete, but the accommodation classifieds are useful. With holiday suggestions of everything from luxury bushwalks to a *City Slickers*-style cattle drive, the NRMA can probably suggest a holiday to suit you.



Online www.nrma.com.au/travel
Rating ■■■■■■■■■■

Megan Smith

See Australia

This is the online arm of See Australia, a national tourism initiative to encourage Australians "to explore their own backyard". It's supported by travel industry groups, corporate interests and the government. You can plan your next holiday so you're in the right place at the right time — but you have to book through Travel.com.au, fly with Ansett, stay in an Acorr hotel and pay with a MasterCard. Independent travellers who really want to 'See Australia' should journey to other sites.



Online www.seeaustralia.com.au
Rating ■■■■■□□□□□

Vanessa Fazzino

Travel Page

US-based Travelpage.com welcomes the armchair traveller with plenty of general information on common worldwide travel destinations. However, it falls short for more discerning and focused jet-setters. When we looked, the hotel listing and search engine repeatedly failed to display accommodation in overseas locations known for having plenty of beds (mostly chain hotels and resorts). This made targeted searches very difficult. Combined with clumsy navigational flow, the failing has produced a rather inhospitable site.



Online www.travelpage.com
Rating ■■■■□□□□□□

March Stepnik

Walkabout

This site was reviewed favourably in *APC* last year (see *APC* February 2000, page 166) and it continues to offer a good mix of information for travellers. You can prepare for your trip by reading some rather rough and ready Australian history and checking out tips on Aussie loves and hates. There's also plenty of detailed information on a good range of destinations. The Travellers' Tales section is mildly entertaining and sometimes informative, and the Magical Mystery section lists some often ignored places of interest.



Online walkabout.fairfax.com.au
Rating ■■■■■■■■□□

Suzanne Fraser

YHA

The Youth Hostels Association (YHA) may be a not-for-profit organisation, but its Web site has a slick corporate gloss. In Australia, the YHA provides travellers with low-cost accommodation, and the site profiles all the member hostels around the country. It hosts an online accommodation and membership booking service, along with a few travel discount offers. There's little travel information on offer, so don't plan your holiday using only this site. As a guide to cheap accommodation, it's definitely useful.

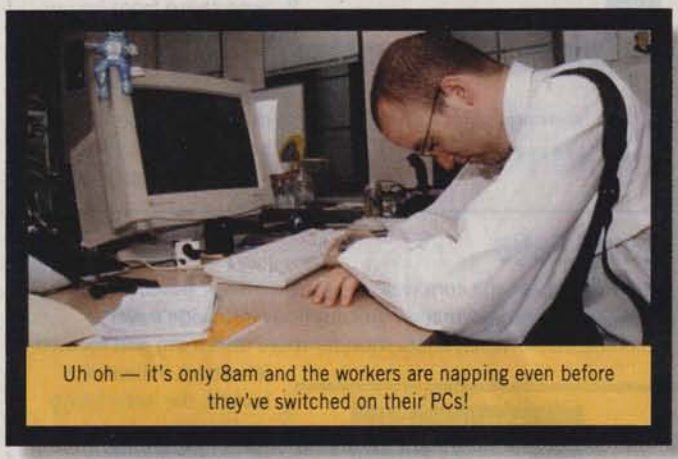


Online www.yha.org.au
Rating ■■■■■■□□□□

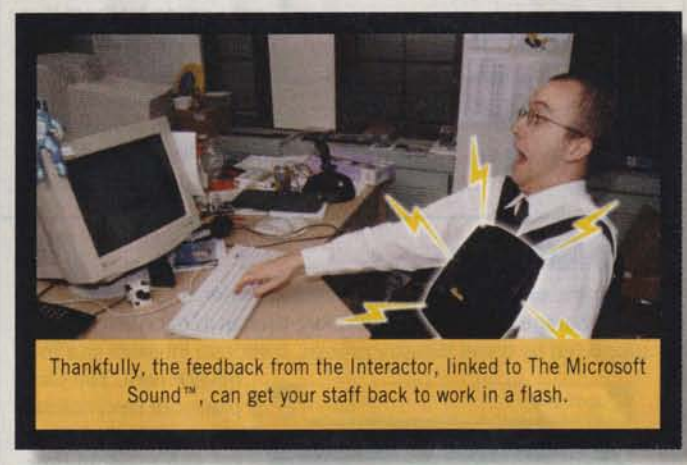
Fiona Angus

Office Interact-ion

The Aura Interactor was designed as a games enhancement device; you sit on the cushion or strap on the backpack and feel them vibrate when sound is played through them. They're pretty cheap nowadays, mostly because gamers don't usually like looking like complete idiots. Nonetheless, APC *is suprised that an enterprising call centre manager hasn't picked up on the productivity gains possible by modifying a bunch of them and forcing workers to wear them as a modern-day ball and chain.*



Uh oh — it's only 8am and the workers are napping even before they've switched on their PCs!



Thankfully, the feedback from the Interactor, linked to The Microsoft Sound™, can get your staff back to work in a flash.



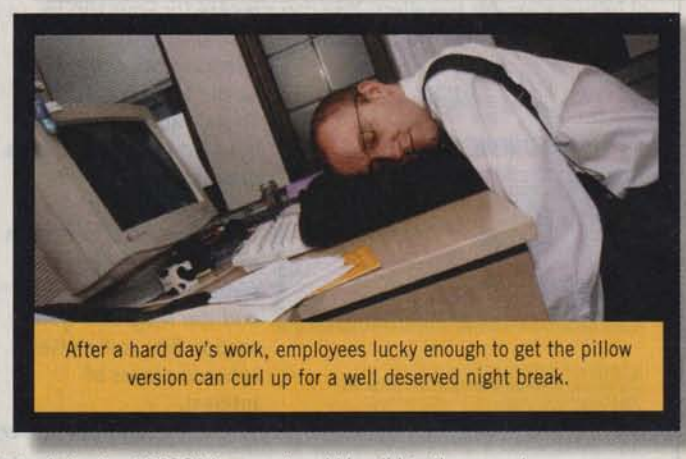
Word-processing accuracy is improved, as each beep of the system 'gently' buzzes employees.



System crashes may be a little more inconvenient.



The increased feedback on the Interactor* makes gameplaying highly unpleasant, subtly encouraging employees to go back to productive work.



After a hard day's work, employees lucky enough to get the pillow version can curl up for a well deserved night break.

*Note: Altering the feedback on the Interactor to near lethal levels may contravene state, federal and RSPCA laws, and could invalidate the warranty.



COMPAQ
Inspiration Technology

NETWORKING SOLUTIONS THAT CAN MAKE A SMALL BUSINESS RUN BIG.

With a Compaq networking solution you can offer your customers new levels of professional service normally reserved for larger organisations. In one simple installation, your entire company can be connected, communicating and taking care of business around the office and around the world. So if you're looking to maximise productivity with minimum resources, look to the next page for more details – and remember, every piece of Compaq equipment you invest in is backed by our ***Peace of Mind Business Promise:***

- *Easy finance packages to help with cash flow.*
- *Configured to order – just tell us what you need.*
- *Knowledgeable professionals who understand your needs.*
- *A range of customer services including installation and training, extended warranties and popular business application support.*
- *IT support from over 1,400 service professionals Australia-wide.*
- *Rapid delivery thanks to our local manufacturing.*

TO BUY DIRECT OR FOR YOUR NEAREST RESELLER CALL

1300 302 480 or visit *www.buy.compaq.com.au/apc1*

intel inside
pentium III

THE SOLUTION TO KEEP YOUR OFFICE IN TOUCH.

AND MORE TO EXTEND YOUR REACH.

We've put together a complete networking solution to expand your business capabilities with the minimum of expenditure. But this is just an example of one of the many Compaq networking solutions available, simply phone us to create the solution specifically for you. What's more all products can be purchased separately and at the foot of the page you'll find a range that will further maximise your productivity. Compaq networking solutions – making your small business run big.

COMPAQ NETWORKING

Only $11,450.00* ($2,862.50 per person) incl. GST. C

SAVE CALL US NOW AND SAVE NEARLY $2,000 C

iPAQ H3130 POCKET PC

- 206MHz Intel® StrongARM processor
- 16MB RAM, 16MB ROM • Handwriting recognition, soft keyboard, voice recorder
- 15" greyscale monochrome display
- Expandable via optional jackets
- 1 year parts and labour warranty[3]

From $845.00* or $9.00 per week[2] incl. GST



iPAQ LEGACY FREE DESKTOP

- Intel® Celeron™ processor 700MHz • 64MB 100MHz SDRAM • Integrated Intel® 3D Graphics
- 10GB Ultra ATA 66 Hard Drive • Integrated AC97 audio • Integrated Intel® Pro/100+ Network Card • 1 year on-site warranty[3]

From $1,095.00* or $11.54 per week[2] incl. GST

Add $369 for Compaq Carbon S510 15" Colour Monitor



COMPAQ DESKPRO EXS

- Intel® Celeron™ processor 700MHz, Intel® i815 Chipset • 64MB 133MHz SDRAM
- Intel® AGP Graphics with 4MB Display Cache
- 10GB Ultra ATA Hard Drive • 48X CD-ROM[1]
- Compaq S510 15" colour monitor
- Microsoft® Windows® Millennium Edition
- Microsoft® Word® 2000 • 3 year warranty[3]

From $1,595.00* or $16.38 per week[2] incl. GST



intel inside
celeron™
PROCESSOR

Compaq recommends Microsoft® Windows® 2000 Professional for business.

*All prices quoted are suggested retail prices only and exclude delivery, reseller prices may vary. Conditions apply: Compaq is a registered trademark of Compaq Computer Corporation. Inspiration Technology is a trademark of Compaq Information Technologies Group, LP in the U.S. and other countries. Intel, the Intel Inside logo and Pentium are registered trademarks and Celeron is a trademark of Intel Corporation. All products and company names are for identification purposes only and may be trademarks and/or registered trademarks of their respective companies. Compaq asserts no rights over third party trademarks. Photographs are for illustrative purposes only and may vary from products depicted. All specifications are subject to change without notice. Information correct as at 5/02/01. Please contact Compaq or your Participating Compaq Reseller on our current pricing and for further information. 1. DVD/CD-ROM transfer rates (eg 8x) are maximum theoretical speeds. Actual transfer rates may be less than stated. 2. If through Compaq Financial Services (Australia) Pty Limited ABN 86 082 062 413, consumer lease, or commercial rental agreement. Payments are monthly based on a 36 month term. Weekly amounts are approximations only. 3. Limited international parts and labour warranty.

FCB/COM3468/APC

1 X CAREPAQ INSTALLATION AND START-UP PACKAGE

Installation and start-up made simple – so you're networked and on-line as soon as possible. CarePaq includes installation of the Neoserver, 3 iPAQ PCs, Armada E500 and Internet Start-up.

1 X NEOSERVER 150

The specialist small business server that provides your business with a quick, easy and cost-effective network.

- *No additional operating system required*
- *File and peripheral sharing*
- *Automated removable data backup*
- *Shared internet access*
- *Built-in secure firewall*
- *Supports up to 100 users*
- *On-site warranty[3]*



SOLUTIONS

$89.84 per week[2] incl. GST.

N YOUR COMPAQ NEOSERVER NETWORKING SOLUTION.*



1 X ARMADA E500

The award-winning Armada E500 notebook provides innovative and easily managed portable solutions that meet your individual needs.

- *Mobile Intel® Pentium® III processor 800MHz*
- *14.1" Colour TFT XGA display*
- *64MB SDRAM, 10GB Hard Drive*
- *24X MAX CD-ROM[1]*
- *Integrated modem and 10/100 ethernet*
- *Microsoft® Windows® 98 SE*
- *1 year pick-up warranty[3]*

3 X iPAQ DESKTOP PCS

Specifically designed from the ground up to take computing to new levels of efficiency.

- *Intel® Celeron™ processor 700MHz*
- *64MB memory, 10GB Hard Drive*
- *Multi-bay CD-ROM Drive*
- *Intel® 3-D graphics, audio and LAN Network Card*
- *Compaq Carbon USB scroll Mouse and USB Internet Keyboard*
- *15" Carbon Colour CRT monitor*
- *1 year on-site warranty[3]*



ARMADA E500

• Mobile Intel® Celeron™ processor 700MHz • 13.3" Colour TFT XGA display • 64MB SDRAM • 10GB Hard Disk Drive • 24X Max CD-ROM[1] • Integrated modem and 10/100 ethernet • Microsoft® Windows® 98 SE • 1 year pick-up warranty[3]

From $3,595.00 or $34.16 per week[2] incl. GST*



PROFESSIONAL WORKSTATION AP550

• Supports up to two Intel® Pentium® III processors 1.0GHz • Dual Install Microsoft® NT4 and Windows® 2000 • Super-fast 800MHz ECC RDRAM memory • Choice of graphics cards certified for 2D and 3D applications • 3 year parts and labour on-site warranty[3]

From $4,750.00 or $43.85 per week[2] incl. GST*



MP1400 PORTABLE PROJECTOR

• 800 X 600 SVGA native display resolution and auto scales up to SXGA 1024 X 768 and Macintosh resolutions • 700 ANSI lumens • Only 1.9kg • Optional remote control and multimedia editor • 2 year warranty[3]

From $6,465.00 or $56.77 per week[2] incl. GST*



Cost-effective CarePaq service and suppport packages are available for all Compaq products. Ask our consultants about the right CarePaq for you.

intel inside pentium III

To buy direct or for your nearest reseller call

1300 302 480

or visit *www.buy.compaq.com.au/apc1*

COMPAQ Inspiration Technology

PLUS DOMAIN NAME HOSTING WEB SITE HOSTING PERMANENT CONNECTIONS BOOMERANGTV E-MAIL ONLY



Internet Anytime

- free e-mail account
- free 10Mb website space
- no admin fees
- 101 national locations
- dealer enquiries welcome

TPG INTERNET

CALL 1300 360 855
OR VISIT www.tpg.com.au

Offer available in Sydney, Albury, Armidale, Bathurst, Coffs Harbour, Cowra, Dubbo, Gosford, Goulburn, Grafton, Kiama/Wollongong, Lake Macquarie/Newcastle, Nowra, Penrith, Port Macquarie, Tamworth, Wagga, Melbourne, Ballarat, Bendigo, Geelong, Lilydale, Mornington, Morwell, Sale, Shepparton, Warragul, Warrnambool, Brisbane, Atherton, Bundaberg, Noosa Heads, Southport/Gold Coast, Toowoomba, Canberra, Adelaide, Perth, Bunbury; Valid credit card required; Unlimited 5 hr sessions; Paid quarterly in advance; FREE 100Mb download per mth; Excess download charged at 18c/Mb, capped at $14.96 per mth • Conditions Apply • Excludes phone connection charges • Local call charge check with Telstra on 12552 •